

# ENERGY WEST MINING COMPANY

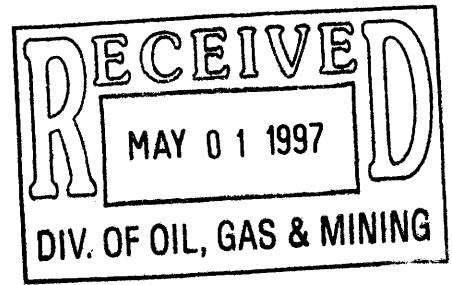
## Department of Oil, Gas & Mining 1996 Annual Report

- 1996 VEGETATION MONITROING REPORT
  - DEER CREEK MINE ACT/015/018
  - DES-BEE-DOVE MINES ACT/015/017
  - COTTONWOOD/WILBERG MINES ACT/015/019
  - TRAIL MOUNTAIN MINE ACT/015/009



PACIFICORP





**PACIFICORP  
VEGETATION MONITORING  
1996**

**VOLUME I**

**REPORTS FOR THE  
COTTONWOOD MINE, DES-BEE-DOVE,  
DEER CREEK, & COTTONWOOD CANYON AREAS**



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## **PACIFICORP VEGETATION MONITORING**

### **REPORT FOR THE COTTONWOOD MINE, DES-BEE-DOVE, DEER CREEK, & COTTONWOOD CANYON AREAS**

1996

## **INTRODUCTION**

This report addresses vegetation monitoring of seeded areas and test plots results for 1996. Several of the areas were also sampled from 1990-1995, so comparisons can be made between years. The following is a list of areas monitored and reported within this document.

### **Cottonwood Mine Area**

Old Fan Road  
4th East Road  
Storage Yard Slope  
Parking Lot Slope  
Road/Silo Pad Slope  
Tipple Area Slopes  
Sediment Pond Banks  
Waste Rock (Old) Cell 1  
Waste Rock (Old) Cell 2  
Waste Rock (Old) Cell 3  
Waste Rock (Old) Cell 4  
Waste Rock (Old) Cell 5  
Waste Rock (Old) Cell 6  
Waste Rock (Old) Cell 7  
Waste Rock (Old) Berm 1  
Waste Rock (Old) Berm 2  
Waste Rock (Old) Berm 3  
Waste Rock (Old) Berm 4  
CTW Reference Area  
Waste Rock (New) Road Slopes  
Waste Rock (New) Topsoil Stockpiles  
Waste Rock (New) Subsoil Stockpiles  
Waste Rock (New) Sediment Pond Banks  
Refuse Berm 1991  
Ninth East Road Breakout  
Test Plots  
Additional Refuse Berms

## **Des-Bee-Dove Area**

Beehive Yard Slope  
Beehive Road Berm  
Deseret Road Berm  
Portal Road Berm  
Bathhouse Road Berm  
Tipple Slope  
Sediment Storage Slope  
Sediment Pond Banks  
Haul Road Bench  
Beehive Substation Slope  
Sediment Pond Area  
Bathhouse Slope  
Material Yard Slope  
Test Plots '89  
Test Plots '92

## **Deer Creek**

Riparian Areas  
Sediment Pond Dam  
Temp. Sediment Basin  
Roadside Areas  
Gate Areas Slope  
Fan Road Slopes  
Refuse Pile and Berm  
Rock Slide and Berm  
Water Plant Slope  
Pipeline  
Deer Canyon  
Waste Rock Access Road Slopes  
Phase I Berm  
Phase I Diversion  
Rilda Facilities Area

## **Trail Mountain Mine**

Sediment Pond Outslope

## **Cottonwood Canyon**

Soil Piles  
Fan Portal Reclaimed Slope  
Tube Conveyor Area (1996 Seeding)

## METHODS

Vegetation monitoring was conducted on revegetated sites and test plots for PACIFICORP in the growing season of 1996. Quantitative and/or qualitative data were taken on each site, depending on the monitoring schedule. In other words, quantitative data sampling was not scheduled this year on some sites. Each data sheet will briefly describe the sample parameters specific to that site.

### QUALITATIVE DATA

Qualitative data were recorded on all sites. A qualitative data sheet for each site is included in this report and provides the following information: site name, general area, sample date, observers, slope, exposure, acreage, animal disturbance, erosion damage, cover, dominant plant species observed, and other pertinent notes.

When quantitative data were recorded, results are shown on these data sheets or reference to where the data is located.

#### Site Name

The site name that is given correlates with PacificCorp's maps of the area and can be used for future reference and sampling.

### Area

The "Area" on the data sheets is a reference to the general mine or property areas for quick reference and general use.

### Date

Sample dates are also provided. All sample dates are within the 1996 growing season.

### Workers

Lists the names of the individuals who recorded the data.

### Exposure

Exposure was recorded on each site. Often the site had several exposures differences. In those cases, "variable" was written for the exposure on the data sheet.

### Animal Disturbance

Values were given to the relative use by animal species at each site. The values and a brief explanation are given below.

None - no animal use was observed.

- Slight - only little animal use was observed by droppings, tracks, or cropped vegetation.
- Moderate - a fair degree of use was observed, mostly by the cropped vegetation. Several inches of production still remained available for use by the animals.
- Severe - animal use had taken nearly all of the available current year's production.

### Erosion

Erosion of the area was also assessed by qualitative methods.

Actual measurements, descriptive notes or values described below were given to each site.

- None - (or negligible) no erosion was observed.
- Slight - small erosion rills beginning, usually less than 2:1 (2 inches wide by 1 inches deep).
- Moderate - erosional rills and gullies from 2:1 to 4:2.
- Severe - erosional rills and gullies over to 4:2 were observed.

### Cover

Cover differences or notes may be given on the data sheet or references to the quantitative data.

### Dominant Plant Species Observed

Sometimes plant species that were observed, but not encountered in the quadrats when sampling. Many of these species were recorded here. However, some of the species that were also encountered in the quadrats. Therefore, for a list of all species on a given site, one should refer to both quantitative and qualitative data sheets.

### Notes

Site-specific, pertinent notes about each area were also taken i.e. identification of special considerations, areas of differential growth patterns, etc. Notes on specific methodologies on each site also are described here.

### Photographs

Color photographs were taken for each site and are included in this report for documentation.

## QUANTITATIVE DATA

### Cover and Composition

Cover estimates were made using ocular methods with randomly or regularly placed meter square quadrats. Total living cover, litter, rock and bareground were recorded. Cover by species was also recorded. Raw data summations were included in this report. They provide all means and standard deviations. Species composition was also assessed from the quadrats. Sample sizes were often kept consistent each year. Because these data are presented to observe only trends for revegetation success and soil stabilization, no attempt was made to achieve sample adequacy for each individual site.

### Woody Species Density

In some areas density estimates were needed. Density of woody plant species were recorded using the point-quarter distance method (Cottom and Curtis 1956) and by using belt transects. In the point-quarter method, random points were placed on the sample sites and measured into four quarters. The distances to the nearest woody plant species were then recorded in each quarter. The average point-to-individual distance was equal to the square root of the mean area per individual. In the belt transect method, sizes of transects varied with individual sites. In this

method total counts of the woody species were conducted in each transect. They were then summed and averaged to calculate the number of individuals per acre.

## RESULTS

To be consistent with previous years, data sheets for qualitative and quantitative (including raw data) sampling are included in this report. This gives the reviewer an overall view of the revegetation success of each area. For results of the above parameters, refer to the site-specific data sheets.

## **COTTONWOOD MINE AREA**

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Old Fan Road

AREA: Cottonwood Mine (1984)

DATE: Sept 6-10, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 13-15 deg.

EXPOSURE: Variable

AREA: .8 acres

ANIMAL USE/DISTURBANCE: Slight

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

*Artemisia tridentata*

*Atriplex confertifolia*

*Chrysothamnus viscidiflorus*

*Chrysothamnus nauseosus*

*Eriogonum corymbosum*

*Gutierrezia sarothrae*

*Juniperus scopulorum*

*Populus angustifolia*

*Aster chilensis*

*Lepidium montanum*

*Linum lewisii*

*Stanleya pinnata*

*Agropyron cristatum*

*Bromus tectorum*

*Elymus cinereus*

*Elymus lanceolatus*

*Elymus spicatus*

*Elymus salinus*

*Elymus trachycaulus*

*Stipa hymenoides*

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Old Fan Road

WOODY SPECIES DENSITY:	<u>1994</u>	<u>1996</u>
<i>Artemesia tridentata</i>	46.48	65.34
<i>Atriplex confertifolia</i>	354.41	272.25
<i>Amalanchier utahensis</i>		10.89
<i>Chrysothamnus nauseosus</i>	1620.99	2243.34
<i>Eriogonum corymbosum</i>	191.73	196.02
<i>Gutierrezia sarothrae</i>	34.86	54.45
<i>Juniperus scopulorum</i>	5.81	
<i>Populus angustifolia</i>	11.62	
<i>Salix lutea</i>		32.67
TOTAL	<u>2265.90</u>	<u>2874.96</u>

- NOTES:
- 1) Sampled cover (n=30), frequency (n=30), density (n=16).
  - 2) Cover estimate included overstory, but none was observed.
  - 3) Placed quadrats at a randomly along entire road.
  - 4) For woody spp. density, we used 5' x 50' belt transects. This meant there was a transect almost all the way up the road -- one after another.
  - 5) Area still looks well vegetated.

**UP&L-COTTONWOOD MINE**

Old Fan Road

1984 (Final)

Acreage: .8

Slope 13-15 deg

Exposure: variable

Sample Date: 6-10 Sept 96

	1.00	2.00	3.00	4.00	5.00	6.00
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**SHRUBS**

<i>Chrysothamnus nauseosus</i>	25.00	0.00	0.00	5.00	0.00	0.00
<i>Atriplex confertifolia</i>	0.00	0.00	0.00	0.00	35.00	0.00
<i>Gutierrezia sarothrae</i>	0.00	0.00	0.00	0.00	0.00	5.00
<i>Salix exigua</i>	0.00	0.00	0.00	0.00	0.00	0.00

**FORBS**

<i>Aster chilensis</i>	10.00	15.00	10.00	5.00	0.00	5.00
<i>Linum lewisii</i>	0.00	0.00	5.00	5.00	0.00	0.00
<i>Circium sp.</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Stanleya pinnata</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Descurainia pinnata</i>	0.00	0.00	0.00	0.00	0.00	0.00

**GRASSES**

<i>Elymus lanceolatus</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus spicatus</i>	0.00	25.00	25.00	50.00	10.00	35.00
<i>Elymus salinus</i>	15.00	10.00	0.00	0.00	0.00	0.00
<i>Agropyron cristatum</i>	0.00	0.00	0.00	0.00	10.00	5.00
<i>Stipa hymenoides</i>	0.00	0.00	0.00	0.00	10.00	0.00
<i>Poa pratensis</i>	0.00	0.00	10.00	0.00	0.00	0.00

**COVER**

Total Living Cover	50.00	50.00	50.00	65.00	65.00	50.00
Litter	5.00	10.00	10.00	10.00	10.00	10.00
Bareground	5.00	15.00	5.00	10.00	15.00	10.00
Rock	40.00	25.00	35.00	15.00	10.00	30.00

**% COMPOSITION**

Shrubs	50.00	0.00	0.00	7.69	53.85	10.00
Forbs	20.00	30.00	30.00	15.38	0.00	10.00
Grasses	30.00	70.00	70.00	76.92	46.15	80.00

7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00
15.00	30.00	5.00	0.00	5.00	5.00	30.00	20.00	0.00
0.00	0.00	10.00	0.00	7.00	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00	5.00	0.00	5.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.00	0.00	5.00	25.00	5.00	15.00	25.00	20.00	40.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	5.00	0.00	5.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70.00	40.00	40.00	40.00	35.00	35.00	60.00	50.00	50.00
5.00	10.00	10.00	10.00	10.00	10.00	5.00	10.00	10.00
5.00	15.00	5.00	10.00	10.00	10.00	30.00	5.00	5.00
20.00	35.00	45.00	40.00	45.00	45.00	5.00	35.00	35.00
28.57	75.00	37.50	0.00	34.29	28.57	50.00	50.00	0.00
57.14	0.00	12.50	62.50	14.29	57.14	41.67	50.00	80.00
14.29	25.00	50.00	37.50	51.43	14.29	8.33	0.00	20.00

16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00	24.00
0.00	0.00	20.00	0.00	0.00	0.00	5.00	10.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00
50.00	35.00	25.00	40.00	25.00	30.00	10.00	5.00	20.00
0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	20.00	10.00	35.00	25.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	5.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	10.00	0.00	5.00	0.00
50.00	35.00	50.00	45.00	45.00	50.00	65.00	55.00	50.00
10.00	5.00	10.00	5.00	10.00	25.00	20.00	10.00	5.00
5.00	5.00	5.00	5.00	5.00	5.00	5.00	25.00	5.00
35.00	55.00	35.00	45.00	40.00	20.00	10.00	10.00	40.00
0.00	0.00	40.00	11.11	0.00	0.00	7.69	18.18	50.00
100.00	100.00	50.00	88.89	55.56	60.00	38.46	9.09	40.00
0.00	0.00	10.00	0.00	44.44	40.00	53.85	72.73	10.00

25.00	26.00	27.00	28.00	29.00	30.00	Mean	SDev	Freq
25.00	5.00	5.00	0.00	35.00	0.00	8.17	10.92	53.33
0.00	0.00	0.00	0.00	0.00	40.00	3.07	9.47	13.33
0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.86	16.67
0.00	0.00	0.00	0.00	0.00	0.00	0.83	4.49	3.33
0.00	10.00	45.00	25.00	20.00	0.00	18.67	14.49	86.67
5.00	0.00	0.00	0.00	0.00	0.00	0.83	2.27	13.33
0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25	6.67
0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.90	3.33
5.00	0.00	0.00	0.00	0.00	0.00	0.17	0.90	3.33
0.00	0.00	0.00	5.00	0.00	0.00	0.17	0.90	3.33
5.00	40.00	0.00	5.00	5.00	10.00	11.43	13.65	70.00
0.00	0.00	0.00	0.00	0.00	0.00	1.67	4.35	13.33
5.00	5.00	0.00	5.00	0.00	10.00	2.83	4.41	36.67
10.00	0.00	10.00	5.00	5.00	0.00	1.33	3.14	16.67
0.00	0.00	0.00	0.00	0.00	0.00	0.83	2.61	10.00
55.00	60.00	60.00	45.00	65.00	60.00	51.33	9.57	
15.00	15.00	5.00	15.00	5.00	10.00	10.00	4.47	
15.00	5.00	5.00	5.00	5.00	5.00	8.67	6.18	
15.00	20.00	30.00	35.00	25.00	25.00	30.00	12.58	
45.45	8.33	8.33	0.00	53.85	66.67	24.50	23.49	
18.18	16.67	75.00	55.56	30.77	0.00	40.63	28.85	
36.36	75.00	16.67	44.44	15.38	33.33	34.87	25.32	

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: 4th East Road

AREA: Cottonwood Mine (1986)

DATE: Sept. 6-10, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 3 - 5 degrees

EXPOSURE: N

AREA: .1 acre

ANIMAL USE/DISTURBANCE:

EROSION: Negligible

COVER: (see quantitative data).

DOMINANT PLANT SPECIES OBSERVED:

*Aster chilensis*  
*Melilotus officinalis*

*Elymus lanceolatus*  
*Elymus smithii*  
*Elymus cinereus*

WOODY SPECIES DENSITY:	Individuals/Ac	
	<u>1995</u>	<u>1996</u>
<i>Chrysanthemus nauseosus</i>		21.78
<i>Eriogonum corymbosum</i>		21.78
<i>Gutierrezia sarothrae</i>	43.56	
<i>Pinus edulis</i>		21.78
TOTAL	<u>43.56</u>	<u>65.34</u>

Page 2  
4th East Road

- NOTES:
- 1) Sampled cover (n=10), frequency (n=10), density (n=8), at regular at 20' intervals up entire road using a 200' tape.
  - 2) The site continues to be in very good condition.
  - 3) There was, however, low spp. diversity.
  - 4) It was a relative small area, hence small sample size required.

**UP&L-COTTONWOOD MINE**

4th East Road (1986)

Acreage: .1

Slope: 3-5 deg

Exposure: N

Sample Date: 6-10 Sept 96

1.00      2.00      3.00      4.00      5.00      6.00

**SHRUBS****FORBS**

Melilotus officinalis	15.00	20.00	20.00	25.00	25.00	20.00
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**GRASSES**

Elymus lanceolatus	40.00	45.00	55.00	25.00	10.00	45.00
Elymus cinereus	0.00	0.00	0.00	0.00	20.00	0.00
Elymus smithii	15.00	0.00	0.00	10.00	0.00	5.00

**COVER**

Total Living Cover	70.00	65.00	75.00	60.00	55.00	70.00
Litter	5.00	10.00	15.00	20.00	10.00	20.00
Bareground	20.00	15.00	5.00	5.00	10.00	5.00
Rock	5.00	10.00	5.00	15.00	25.00	5.00

**% COMPOSITION**

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	21.43	30.77	26.67	41.67	45.45	28.57
Grasses	78.57	69.23	73.33	58.33	54.55	71.43

7.00	8.00	9.00	10.00	Mean	SDev	Freq
20.00	5.00	20.00	35.00	20.50	7.23	100.00
25.00	45.00	45.00	35.00	37.00	12.69	100.00
0.00	0.00	0.00	0.00	2.00	6.00	10.00
0.00	5.00	0.00	0.00	3.50	5.02	40.00
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45.00	55.00	65.00	70.00	63.00	8.72	
35.00	35.00	25.00	10.00	18.50	10.01	
10.00	5.00	5.00	10.00	9.00	4.90	
10.00	5.00	5.00	10.00	9.50	6.10	
-----	-----	-----	-----	-----	-----	-----
0.00	0.00	0.00	0.00	0.00	0.00	
44.44	9.09	30.77	50.00	32.89	11.94	
55.56	90.91	69.23	50.00	67.11	11.94	
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PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Storage Yard Slope

AREA: Cottonwood Mine (1988 Reveg. Area)

DATE: Sept. 6-10, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 30 - 40 deg.

EXPOSURE: S & E

AREA: 1.3 acres

ANIMAL USE/DISTURBANCE:

EROSION: Moderate

COVER: (see quantitative data).

DOMINANT PLANT SPECIES OBSERVED: (see quantitative data)

*Chrysothamnus nauseosus*

*Penstemon palmeri*

*Aster chilensis*

*Kochia scoparia*

*Bromus tectorum*

*Sitanion hystrrix*

*Elymus cinereus*

*Elymus spicatus*

*Agropyron cristatum*

*Elymus lanceolatus*

*Stipa hymenoides*

NOTES: 1) Sampled regularly around area (n=10).

2) As before, the east exposure supported mostly weedy species, whereas, the south face has a fair representation of native species.

**UP&L-COTTONWOOD/WILBERG**

Storage Yard Slope

1988 Reveg. Interim

Acreage: 1.3

Slope: S & E

Exposure: 30 - 40 deg

Sample Date: 6-10 Sept 96

	1.00	2.00	3.00	4.00	5.00	6.00
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**SHRUBS**

Chrysothamnus nauseosus	0.00	0.00	0.00	0.00	20.00	0.00
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**FORBS**

Aster chilensis	0.00	15.00	0.00	0.00	0.00	0.00
Penstemon palmeri	0.00	0.00	0.00	0.00	10.00	0.00
Kochia scoparia	30.00	0.00	35.00	20.00	0.00	5.00

**GRASSES**

Sitanion hystris	0.00	0.00	0.00	0.00	0.00	5.00
Bromus tectorum	0.00	0.00	0.00	0.00	0.00	10.00
Elymus lanceolatus	0.00	20.00	0.00	0.00	10.00	5.00
Elymus spicatus	0.00	0.00	0.00	0.00	10.00	0.00
Stipa hymenoides	0.00	5.00	0.00	0.00	0.00	0.00
Elymus cinereus	0.00	0.00	0.00	0.00	0.00	10.00
Agropyron cristatum	0.00	0.00	0.00	15.00	0.00	0.00

**COVER**

Total Living Cover	30.00	40.00	35.00	35.00	50.00	35.00
Litter	10.00	10.00	5.00	20.00	20.00	25.00
Bareground	25.00	30.00	35.00	20.00	10.00	15.00
Rock	35.00	20.00	25.00	25.00	20.00	25.00

**% COMPOSITION**

Shrubs	0.00	0.00	0.00	0.00	40.00	0.00
Forbs	100.00	37.50	100.00	57.14	20.00	14.29
Grasses	0.00	62.50	0.00	42.86	40.00	85.71

7.00	8.00	9.00	10.00	Mean	SDev	Freq
70.00	10.00	45.00	30.00	17.50	22.94	50.00
0.00	0.00	0.00	0.00	1.50	4.50	10.00
0.00	5.00	0.00	5.00	2.00	3.32	30.00
0.00	0.00	0.00	0.00	9.00	13.19	40.00
0.00	0.00	0.00	0.00	0.50	1.50	10.00
0.00	0.00	0.00	0.00	1.00	3.00	10.00
0.00	0.00	0.00	0.00	3.50	6.34	30.00
0.00	0.00	0.00	0.00	1.00	3.00	10.00
10.00	40.00	0.00	0.00	5.50	11.93	30.00
0.00	0.00	0.00	0.00	1.00	3.00	10.00
0.00	0.00	0.00	20.00	3.50	7.09	20.00
80.00	55.00	45.00	55.00	46.00	14.11	
10.00	10.00	10.00	10.00	13.00	6.00	
5.00	10.00	20.00	10.00	18.00	9.27	
5.00	25.00	25.00	25.00	23.00	7.14	
87.50	18.18	100.00	54.55	30.02	36.81	
0.00	9.09	0.00	9.09	34.71	36.60	
12.50	72.73	0.00	36.36	35.27	30.03	

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Parking Lot Slope

AREA: Cottonwood Mine

DATE: Sept. 6-10, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 26 deg.

EXPOSURE: E

**ANIMAL USE/DISTURBANCE:**

EROSION: Slight to moderate

COVER: (see quantitative data)

**DOMINANT PLANT SPECIES OBSERVED:**

*Chrysanthemus nauseosus*  
*Eriogonum corymbosum*

*Aster chilensis*  
*Kochia scoparia*  
*Chenopodium album*  
*Medicago sativa*  
*Grindelia squarrosa*

*Agropyron cristatum*  
*Elymus cinereus*  
*Elymus lanceolatus*  
*Sitanion hystrix*  
*Stipa hymenoides*

NOTES: 1) Cover (n=10)

- 2) Similar to 1993-1995, most of the species were weedy, except for the very north end of the slope (>80% weeds).
- 3) The erosion has been treated with gravel that disturbed the established vegetation.

**UP&L-COTTONWOOD MINE**

Parking Lot Slope

1988 Reveg Interim

Acreage:

Slope: 26 deg

Exposure: E

Sample Date: 6-10 Sept 96

1.00      2.00      3.00      4.00      5.00      6.00

**SHRUBS**

<i>Chrysothamnus nauseosus</i>	0.00	5.00	0.00	0.00	0.00	0.00
<i>Eriogonum corymbosum</i>	0.00	10.00	0.00	0.00	0.00	0.00

**FORBS**

<i>Aster chilensis</i>	0.00	0.00	20.00	0.00	0.00	30.00
<i>Kochia scoparia</i>	0.00	0.00	0.00	35.00	35.00	0.00
<i>Grindelia squarrosa</i>	5.00	5.00	0.00	0.00	0.00	0.00

**GRASSES**

<i>Stipa hymenoides</i>	35.00	20.00	0.00	0.00	5.00	0.00
<i>Elymus hispidus</i>	0.00	0.00	0.00	0.00	0.00	10.00
<i>Elymus lanceolatus</i>	0.00	0.00	0.00	0.00	0.00	0.00

**COVER**

Total Living Cover	40.00	40.00	20.00	35.00	40.00	40.00
Litter	10.00	10.00	5.00	5.00	15.00	5.00
Bareground	25.00	10.00	5.00	5.00	5.00	15.00
Rock	25.00	40.00	70.00	55.00	40.00	40.00

**% COMPOSITION**

Shrubs	0.00	37.50	0.00	0.00	0.00	0.00
Forbs	12.50	12.50	100.00	100.00	87.50	75.00
Grasses	87.50	50.00	0.00	0.00	12.50	25.00

7.00	8.00	9.00	10.00	Mean	SDev	Freq
0.00	0.00	10.00	0.00	1.50	3.20	20.00
0.00	0.00	5.00	0.00	1.50	3.20	20.00
20.00	25.00	5.00	0.00	10.00	11.62	50.00
0.00	0.00	0.00	5.00	7.50	13.83	30.00
0.00	0.00	0.00	0.00	0.00	2.00	20.00
0.00	0.00	0.00	0.00	6.00	11.36	30.00
10.00	0.00	0.00	0.00	2.00	4.00	20.00
10.00	0.00	0.00	0.00	1.00	3.00	10.00
40.00	25.00	20.00	5.00	30.50	11.72	
10.00	10.00	10.00	3.00	8.30	3.47	
20.00	15.00	10.00	2.00	11.20	7.07	
30.00	50.00	60.00	90.00	50.00	18.57	
0.00	0.00	75.00	0.00	11.25	24.01	
50.00	100.00	25.00	100.00	66.25	35.82	
50.00	0.00	0.00	0.00	22.50	28.94	

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Road/Silo Pad Slope

AREA: Cottonwood Mine (1988 Reveg. Area)

DATE: September 6-10, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 35 deg.

EXPOSURE: SE

ACREAGE: 1.4 acre

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Moderate (see notes)

COVER: (see quantitative data).

DOMINANT PLANT SPECIES OBSERVED:

*Chrysanthemus nauseosus*

*Eriogonum corymbosum*

*Aster glaucodes*

*Grindelia squarrosa*

*Kochia scoparia*

*Medicago sativa*

*Elymus lanceolatus*

*Elymus spicatus*

*Stipa hymenoides*

- NOTES:
- 1) We took five samples below the test plot and five by LDS method due to steep, unstable slopes (cover n=10).
  - 2) Area was active with mine activity and constantly under change. The plant growth is unstable.

**UP&L-COTTONWOOD MINE**

Road/Silo Pad Slope

1988 Reveg Interim

Acreage: 1.4

Slope: 35 deg

Exposure: SE

Sample Date: 6-10 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00

**SHRUBS**

Eriogonum corymbosum	5.00	0.00	10.00	20.00	0.00	0.00
Chrysothamnus nauseosus	20.00	40.00	0.00	15.00	25.00	0.00
Atriplex confertifolia	0.00	0.00	0.00	0.00	0.00	0.00

**FORBS**

Melilotus officinalis	5.00	0.00	0.00	0.00	0.00	0.00
Aster chilensis	15.00	25.00	20.00	5.00	5.00	0.00
Salsola pestifer	0.00	0.00	0.00	0.00	0.00	10.00

**GRASSES**

Stipa hymenoides	0.00	0.00	10.00	0.00	0.00	0.00
Elymus spicatus	0.00	0.00	0.00	0.00	10.00	0.00
Elymus lanceolatus	0.00	0.00	0.00	0.00	0.00	0.00
Agropyron cristatum	5.00	0.00	0.00	0.00	0.00	0.00

**COVER**

Total Living Cover	50.00	65.00	40.00	40.00	40.00	10.00
Litter	15.00	10.00	25.00	10.00	10.00	5.00
Bareground	10.00	10.00	10.00	25.00	10.00	10.00
Rock	25.00	15.00	25.00	25.00	40.00	75.00

**% COMPOSITION**

Shrubs	50.00	61.54	25.00	87.50	62.50	0.00
Forbs	40.00	38.46	50.00	12.50	12.50	100.00
Grasses	10.00	0.00	25.00	0.00	25.00	0.00

7.00	8.00	9.00	10.00	Mean	SDev	Freq
0.00	0.00	10.00	0.00	4.50	6.50	40.00
5.00	0.00	5.00	0.00	11.00	13.00	60.00
5.00	0.00	0.00	0.00	0.50	1.50	10.00
<hr/>						
0.00	0.00	0.00	0.00	0.50	1.50	10.00
0.00	0.00	0.00	10.00	8.00	8.72	60.00
10.00	15.00	0.00	0.00	3.50	5.50	30.00
<hr/>						
0.00	0.00	0.00	0.00	1.00	3.00	10.00
0.00	0.00	0.00	0.00	1.00	3.00	10.00
0.00	0.00	0.00	5.00	0.50	1.50	10.00
0.00	0.00	0.00	0.00	0.50	1.50	10.00
<hr/>						
20.00	15.00	15.00	15.00	31.00	17.58	
10.00	5.00	10.00	5.00	10.50	5.68	
5.00	10.00	10.00	10.00	11.00	4.90	
65.00	70.00	65.00	70.00	47.50	22.39	
<hr/>						
50.00	0.00	100.00	0.00	43.65	34.52	
50.00	100.00	0.00	66.67	47.01	32.76	
0.00	0.00	0.00	33.33	9.33	12.61	

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Tipple Area Slope

AREA: Cottonwood Mine (1988 Reveg. Area)

DATE: Sept 6-10, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 35 deg.

EXPOSURE: Variable

AREA: .1 acre

ANIMAL USE/DISTURBANCE:

EROSION: Moderate

COVER: (see quantitative data).

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex confertifolia*

*Atriplex gardneri*

*Eriogonum corymbosum*

*Chrysanthemus nauseosus*

*Aster chilensis*

*Aster glaucodes*

*Halogeton glomeratus*

*Kochia scoparia*

*Salsola pestifer*

*Elymus lanceolatus*

*Stipa hymenoides*

- NOTES:
- 1) We placed quadrats regularly over area. Cover (n=10), freq. (n=10).
  - 2) Area is still active constantly changing and active and therefore, unstable for plant growth. It's a difficult place for desirable spp. to become established.
  - 3) Cover by composition was greater than 50% weedy species in some areas, but others had more.

**UP&L-COTTONWOOD MINE**

Tipple Area Slope

1988 Reveg Interim

Acreage: .1

Slope: 35 deg

Exposure: variable

Sample Date: 6-10 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00

**SHRUBS**

<i>Chrysothamnus nauseosus</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Atriplex gardneri</i>	25.00	0.00	0.00	0.00	0.00	0.00
<i>Eriogonum corymbosum</i>	0.00	0.00	0.00	0.00	0.00	20.00
<i>Atriplex confertifolia</i>	0.00	0.00	25.00	15.00	0.00	0.00

**FORBS**

<i>Kochia scoparia</i>	10.00	15.00	0.00	0.00	0.00	0.00
<i>Halogeton glomeratus</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Aster chilensis</i>	5.00	10.00	0.00	0.00	0.00	0.00
<i>Salsola pestifer</i>	0.00	5.00	10.00	0.00	0.00	5.00

**GRASSES**

<i>Stipa hymenoides</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus lanceolatus</i>	0.00	0.00	0.00	0.00	5.00	0.00

**COVER**

Total Living Cover	40.00	30.00	35.00	15.00	5.00	25.00
Litter	20.00	5.00	10.00	5.00	5.00	5.00
Bareground	35.00	45.00	30.00	55.00	10.00	5.00
Rock	5.00	20.00	25.00	25.00	80.00	65.00

**% COMPOSITION**

Shrubs	62.50	0.00	71.43	100.00	0.00	80.00
Forbs	37.50	100.00	28.57	0.00	0.00	20.00
Grasses	0.00	0.00	0.00	0.00	100.00	0.00

7.00	8.00	9.00	10.00	Mean	SDev	Freq
15.00	0.00	0.00	0.00	1.50	4.50	10.00
0.00	0.00	0.00	0.00	2.50	7.50	10.00
0.00	0.00	0.00	0.00	2.00	6.00	10.00
0.00	0.00	0.00	0.00	4.00	8.31	20.00
<hr/>						
0.00	0.00	0.00	30.00	5.50	9.60	30.00
25.00	0.00	5.00	0.00	3.00	7.48	20.00
0.00	0.00	35.00	0.00	5.00	10.49	30.00
0.00	25.00	0.00	0.00	4.50	7.57	40.00
<hr/>						
0.00	0.00	10.00	0.00	1.00	3.00	10.00
0.00	0.00	0.00	0.00	0.50	1.50	10.00
<hr/>						
40.00	25.00	50.00	30.00	29.50	12.34	
5.00	10.00	5.00	10.00	8.00	4.58	
5.00	10.00	10.00	10.00	21.50	17.33	
50.00	55.00	35.00	50.00	41.00	21.77	
<hr/>						
37.50	0.00	0.00	0.00	35.14	38.03	
62.50	100.00	80.00	100.00	52.86	38.72	
0.00	0.00	20.00	0.00	12.00	29.93	

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Sediment Pond Banks

AREA: Cottonwood Mine (1988 Reveg. Area)

DATE: Sept. 6-10, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 35 deg.

EXPOSURE: Variable

AREA: .9 acre

ANIMAL USE/DISTURBANCE:

EROSION: Slight

COVER: (see quantitative data).

DOMINANT PLANT SPECIES OBSERVED: (see quantitative data)

*Atriplex canescens*  
*Chrysanthemus nauseosus*

*Aster chilensis*  
*Convolvulus arvensis*  
*Grindelia squarrosa*  
*Halogeton glomeratus*  
*Kochia scoparia*  
*Machaeranthera canescens*  
*Malcomia africana*  
*Melilotus officinalis*  
*Salsola pestifer*

*Agropyron cristatum*  
*Bromus inermis*  
*Elymus cinereus*  
*Elymus lanceolatus*  
*Elymus spicatus*  
*Sitanion hystrrix*  
*Stipa hymenoides*

Page 2  
Sediment Pond Banks

- NOTES:
- 1) Cover (n=15)
  - 2) As we've said previously, there has been little change from year to year due to constant use and maintenance.
  - 3) Patchy vegetation growth patterns with some desirable and some weedy species. This is due to erosion control and fluctuating water levels in pond.
  - 4) The species comp. was highly variable. There was a "band" around the pond of desirable spp. and one of weedy spp.
  - 5) Sampled regularly around pond.
  - 6) Regular maintenance of pond disturbs vegetation.

**UP&L-COTTONWOOD MINE**

Sediment Pond Banks

1988 Reveg Interim

Acreage: .9

Slope: 35 deg

Exposure: variable

Sample Date: 6-10 Sept 96

	1.00	2.00	3.00	4.00	5.00	6.00
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**SHRUBS**

<i>Chrysothamnus nauseosus</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Eriogonum corymbosum</i>	0.00	0.00	0.00	0.00	0.00	0.00

**FORBS**

<i>Penstemon palmeri</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Grindelia squarrosa</i>	0.00	0.00	0.00	15.00	5.00	0.00
<i>Melilotus officinalis</i>	0.00	0.00	0.00	0.00	0.00	55.00
<i>Aster chilensis</i>	15.00	0.00	65.00	0.00	0.00	10.00
<i>Kochia scoparia</i>	0.00	25.00	0.00	0.00	0.00	0.00
<i>Halogeton glomeratus</i>	10.00	10.00	0.00	0.00	5.00	0.00
<i>Malcomia africana</i>	0.00	0.00	0.00	0.00	5.00	0.00
<i>Salsola pestifer</i>	5.00	0.00	0.00	5.00	0.00	0.00
<i>Helianthus annuus</i>	0.00	0.00	0.00	0.00	10.00	0.00

**GRASSES**

<i>Elymus cinereus</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Stipa hymenoides</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Agropyron cristatum</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus lanceolatus</i>	0.00	5.00	0.00	5.00	0.00	0.00
<i>Elymus spicatus</i>	0.00	0.00	10.00	0.00	0.00	0.00

**COVER**

Total Living Cover	30.00	40.00	75.00	25.00	25.00	65.00
Litter	5.00	5.00	10.00	5.00	5.00	5.00
Bareground	25.00	30.00	5.00	25.00	5.00	5.00
Rock	40.00	25.00	10.00	45.00	65.00	25.00

**% COMPOSITION**

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	100.00	0.00	86.67	80.00	100.00	100.00
Grasses	0.00	0.00	13.33	20.00	0.00	0.00

7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00
0.00	0.00	15.00	0.00	20.00	10.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	35.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	5.00	5.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	35.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	45.00	50.00	0.00
20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	35.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	20.00	15.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	10.00	5.00	0.00	0.00	0.00
0.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.00	45.00	60.00	50.00	50.00	40.00	45.00	50.00	35.00
5.00	5.00	10.00	10.00	10.00	20.00	10.00	10.00	10.00
10.00	15.00	10.00	15.00	5.00	10.00	30.00	20.00	20.00
45.00	35.00	20.00	25.00	35.00	30.00	15.00	20.00	35.00
0.00	0.00	25.00	0.00	40.00	37.50	0.00	0.00	100.00
100.00	100.00	8.33	30.00	0.00	12.50	100.00	100.00	0.00
0.00	0.00	66.67	70.00	60.00	50.00	0.00	0.00	0.00

UP&L-COTTONWOOD MINE  
 Sediment Pond Banks  
 1988 Reveg Interim  
 Acreage: .9  
 Slope: 35 deg  
 Exposure: variable

Mean      SDev      Freq      Sample Date: 6-10 Sept 96

**SHRUBS**

3.00	6.27	20.00	<i>Chrysothamnus nauseosus</i>
2.67	8.73	13.33	<i>Eriogonum corymbosum</i>

**FORBS**

0.33	1.25	6.67	<i>Penstemon palmeri</i>
2.00	4.00	26.67	<i>Grindelia squarrosa</i>
3.67	13.72	6.67	<i>Melilotus officinalis</i>
9.00	17.63	33.33	<i>Aster chilensis</i>
1.67	6.24	6.67	<i>Kochia scoparia</i>
8.00	15.90	33.33	<i>Halogeton glomeratus</i>
1.67	5.06	13.33	<i>Malcomia africana</i>
2.67	5.44	26.67	<i>Salsola pestifer</i>
0.67	2.49	6.67	<i>Helianthus annuus</i>

**GRASSES**

2.33	8.73	6.67	<i>Elymus cinereus</i>
2.33	6.02	13.33	<i>Stipa hymenoides</i>
1.00	2.71	13.33	<i>Agropyron cristatum</i>
3.33	9.94	20.00	<i>Elymus lanceolatus</i>
0.67	2.49	6.67	<i>Elymus spicatus</i>

**COVER**

45.00	13.66	Total Living Cover
8.33	3.94	Litter
15.33	8.84	Bareground
31.33	13.47	Rock

**% COMPOSITION**

13.50	26.95	Shrubs
61.17	43.91	Forbs
18.67	26.83	Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Cell #1

AREA: Cottonwood Mine Old Waste Rock Area (1983 Interim Reveg)

DATE: Sept 2-6, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 0-1 deg.

EXPOSURE: E

ANIMAL USE/DISTURBANCE: slight to moderate

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

*Artemisia tridentata*  
*Atriplex canescens*  
*Gutierrezia sarothrae*  
*Ceratoides lanata*  
*Cercocarpus ledifolius*

*Agropyron cristatum*  
*Bromus tectorum*  
*Elymus lanceolatus*  
*Elymus spicatus*  
*Elymus smithii*  
*Poa pratensis*  
*Stipa hymenoides*

WOODY SPECIES DENSITY:	Individuals/Ac		
	<u>1994</u>	<u>1995</u>	<u>1996</u>
<i>Artemisia tridentata</i>	229.80		183.02
<i>Atriplex canescens</i>	804.29	1541.95	1342.18
<i>Atriplex confertifolia</i>	76.60		
<i>Ceratoides lanata</i>			61.01
<i>Cercocarpus montanus</i>	76.60		
<i>Chrysothamnus nauseosus</i>	153.20	626.42	305.04
<i>Ephedra viridis</i>			61.01
<i>Gutierrezia sarothrae</i>	957.48	2650.22	1708.22
Total	<u>2297.97</u>	<u>4818.58</u>	<u>3660.48</u>

- NOTES:
- 1) Did not take production this year
  - 2) Sampled for cover ( $n=15$ ) & density ( $n=15$ ).
  - 3) Placed 3 transects in area and sampled every 30' at right angles from them with random numbers.
  - 4) Used pt. quarter method for density ( $n=15$ ).

**UP&L-COTTONWOOD MINE**

Cell #1

Old Waste Rock (Interim Reveg '83)

Slope: 0-1 deg

Exposure: E

Sample Date: 2-6 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00

**SHRUBS**

Atriplex canescens	0.00	15.00	0.00	5.00	55.00	0.00
Gutierrezia sarothrae	5.00	5.00	5.00	10.00	5.00	5.00
Chrysothamnus nauseosus	30.00	0.00	0.00	0.00	0.00	0.00
Cercocarpus ledifolius	0.00	0.00	0.00	0.00	0.00	5.00

**FORBS****GRASSES**

ELSM	0.00	0.00	0.00	0.00	0.00	0.00
Bromus tectorum	5.00	0.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	0.00	10.00	35.00	15.00	0.00	10.00
Agropyron cristatum	10.00	20.00	10.00	5.00	10.00	5.00
Elymus spicatus	0.00	0.00	0.00	0.00	0.00	0.00
Stipa hymenoides	0.00	5.00	0.00	0.00	0.00	0.00
Poa pratensis	0.00	0.00	0.00	5.00	0.00	0.00

**COVER**

Total Living Cover	50.00	55.00	50.00	40.00	70.00	25.00
Litter	25.00	10.00	10.00	5.00	10.00	5.00
Bareground	10.00	25.00	15.00	25.00	10.00	10.00
Rock	15.00	10.00	25.00	30.00	10.00	60.00

**% COMPOSITION**

Shrubs	70.00	36.36	10.00	37.50	85.71	40.00
Forbs	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	30.00	63.64	90.00	62.50	14.29	60.00

7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00
50.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00	25.00
0.00	10.00	5.00	0.00	15.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	30.00	15.00	0.00	5.00	0.00	0.00	10.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	35.00	10.00	45.00	0.00	10.00	40.00	35.00	10.00
10.00	10.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
0.00	5.00	0.00	5.00	5.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70.00	60.00	45.00	65.00	25.00	75.00	40.00	35.00	55.00
10.00	10.00	5.00	15.00	5.00	10.00	10.00	10.00	25.00
10.00	15.00	25.00	15.00	45.00	5.00	25.00	30.00	15.00
10.00	15.00	25.00	5.00	25.00	10.00	25.00	25.00	5.00
71.43	16.67	11.11	0.00	60.00	80.00	0.00	0.00	45.45
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28.57	83.33	88.89	100.00	40.00	20.00	100.00	100.00	54.55

**UP&L-COTTONWOOD MINE**  
**Cell #1**  
**Old Waste Rock (Interim Reveg '83)**  
**Slope: 0-1 deg**  
**Exposure: E**  
**Sample Date: 2-6 Sept 96**

Mean	SDev	Freq	
			<b>SHRUBS</b>
14.00	21.69	26.67	<i>Atriplex canescens</i>
4.33	4.42	60.00	<i>Gutierrezia sarothrae</i>
2.00	7.48	6.67	<i>Chrysothamnus nauseosus</i>
0.33	1.25	6.67	<i>Cercocarpus ledifolius</i>

**FORBS**

			<b>GRASSES</b>
4.00	8.21	26.67	<i>ELSM</i>
0.33	1.25	6.67	<i>Bromus tectorum</i>
17.67	15.15	80.00	<i>Elymus lanceolatus</i>
5.67	5.73	60.00	<i>Agropyron cristatum</i>
0.67	2.49	6.67	<i>Elymus spicatus</i>
1.33	2.21	26.67	<i>Stipa hymenoides</i>
0.33	1.25	6.67	<i>Poa pratensis</i>

			<b>COVER</b>
50.67	15.26		Total Living Cover
11.00	6.11		Litter
18.67	10.08		Bareground
19.67	13.47		Rock

			<b>% COMPOSITION</b>
37.62	29.46		Shrubs
0.00	0.00		Forbs
62.38	29.46		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Cell #2

AREA: Cottonwood Mine Old Waste Rock Area (1984 Interim Reveg)

DATE: Sept. 2-6, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 0-1 deg.

EXPOSURE: E

AREA: ~ 1 acre

ANIMAL USE/DISTURBANCE:

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Artemisia tridentata*  
*Atriplex canescens*  
*Gutierrezia sarothrae*

*Agropyron cristatum*  
*Bromus tectorum*  
*Bromus carinatus*  
*Elymus lanceolatus*  
*Elymus spicatus*  
*Elymus hispidus*  
*Elymus smithii*  
*Hilaria jamesii*  
*Poa pratensis*  
*Sitanion hystrrix*  
*Stipa hymenoides*

DENSITY: Individuals/Acre

	<u>1994</u>	<u>1995</u>	<u>1996</u>
<i>Artemisia tridentata</i>			28.48
<i>Atriplex canescens</i>	834.88	878.17	825.44
<i>Atriplex confertifolia</i>	53.29	27.88	28.48
<i>Chrysothamnus nauseosus</i>	17.76	97.57	58.96
<i>Gutierrezia sarothrae</i>	142.11	376.36	825.44
<i>Artemisia tridentata</i>	17.76	27.88	
Total	<u>1065.80</u>	<u>1393.92</u>	<u>1760.80</u>

Page 2  
Cell #2

- NOTES:
- 1) Did not take production this year
  - 2) Sampled for cover ( $n=15$ ) & density ( $n=15$ ).
  - 3) Placed 3 transects in area and sampled every 30' at right angles from them with random numbers.
  - 4) Used pt. quarter method for density ( $n=15$ ).

## UP&amp;L-COTTONWOOD MINE

Cell #2

Old Waste Rock (Interim Reveg '84)

Slope: 0-1 deg

Exposure: E

Sample Date: 2-6 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00

**SHRUBS**

Atriplex canescens	0.00	55.00	0.00	0.00	30.00	0.00
Gutierrezia sarothrae	5.00	0.00	5.00	10.00	0.00	20.00

**FORBS**

Halopegon glomeratus	2.00	0.00	0.00	0.00	0.00	5.00
Salsola pestifer	3.00	0.00	0.00	0.00	5.00	0.00

**GRASSES**

Poa pratensis	0.00	0.00	0.00	0.00	0.00	0.00
Elymus smithii	5.00	0.00	0.00	0.00	0.00	0.00
Sitanion hystris	0.00	0.00	0.00	5.00	0.00	0.00
Elymus spicatus	0.00	0.00	0.00	0.00	5.00	0.00
Elymus lanceolatus	10.00	0.00	5.00	15.00	15.00	10.00
Agropyron cristatum	0.00	5.00	5.00	10.00	10.00	0.00
Bromus tectorum	0.00	5.00	0.00	0.00	0.00	0.00

**COVER**

Total Living Cover	25.00	65.00	15.00	40.00	65.00	35.00
Litter	5.00	20.00	5.00	25.00	10.00	5.00
Bareground	45.00	5.00	15.00	5.00	15.00	35.00
Rock	25.00	10.00	65.00	30.00	10.00	25.00

**% COMPOSITION**

Shrubs	20.00	84.62	33.33	25.00	46.15	57.14
Forbs	20.00	0.00	0.00	0.00	7.69	14.29
Grasses	60.00	15.38	66.67	75.00	46.15	28.57

7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00
10.00	5.00	40.00	35.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	0.00	10.00	5.00	5.00	10.00
0.00	0.00	0.00	0.00	0.00	10.00	5.00	0.00	15.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	5.00	0.00	25.00	55.00	10.00	20.00	25.00	35.00
0.00	0.00	40.00	0.00	0.00	5.00	10.00	5.00	5.00
0.00	0.00	10.00	0.00	0.00	0.00	0.00	5.00	0.00
45.00	20.00	90.00	60.00	65.00	40.00	40.00	40.00	65.00
10.00	5.00	3.00	10.00	10.00	10.00	10.00	15.00	10.00
20.00	25.00	2.00	10.00	10.00	15.00	30.00	10.00	15.00
25.00	50.00	5.00	20.00	15.00	35.00	20.00	35.00	10.00
22.22	25.00	44.44	58.33	0.00	12.50	0.00	0.00	0.00
0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
77.78	25.00	55.56	41.67	100.00	87.50	100.00	100.00	100.00

UP&L-COTTONWOOD MINE  
 Cell #2  
 Old Waste Rock (Interim Reveg '84)  
 Slope: 0-1 deg  
 Exposure: E  
 Sample Date: 2-6 Sept 96

Mean	SDev	Freq	
SHRUBS			
11.67	17.95	40.00	<i>Atriplex canescens</i>
3.00	5.42	33.33	<i>Gutierrezia sarothrae</i>
FORBS			
1.13	2.70	20.00	<i>Halogeton glomeratus</i>
0.53	1.41	13.33	<i>Salsola pestifer</i>
GRASSES			
0.67	2.49	6.67	<i>Poa pratensis</i>
4.33	7.72	40.00	<i>Elymus smithii</i>
2.33	4.42	26.67	<i>Sitanion hystrix</i>
0.33	1.25	6.67	<i>Elymus spicatus</i>
15.67	14.24	80.00	<i>Elymus lanceolatus</i>
6.33	9.74	60.00	<i>Agropyron cristatum</i>
1.33	2.87	20.00	<i>Bromus tectorum</i>
COVER			
47.33	19.82		Total Living Cover
10.20	5.76		Litter
17.13	11.62		Bareground
25.33	15.65		Rock
% COMPOSITION			
28.58	24.62		Shrubs
6.13	13.16		Forbs
65.29	28.37		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Cell #3

AREA: Cottonwood Mine Old Waste Rock Area (1985 Interim Reveg)

DATE: Sept. 2-6, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 0-1 deg.

EXPOSURE: E

ANIMAL USE/DISTURBANCE: Slight

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex canescens*

*Atriplex cuneata*

*Chrysothamnus nauseosus*

*Ephedra viridis*

*Gutierrezia sarothrae*

*Sphaeralcea grossulariifolia*

*Agropyron cristatum*

*Bromus tectorum*

*Elymus hispidus*

*Elymus lanceolatus*

*Elymus smithii*

*Hilaria jamesii*

*Stipa hymenoides*

*Stipa comata*

DENSITY:

	<u>1994</u>	<u>1995</u>	<u>1996</u>
<i>Atriplex canescens</i>	1137.23	1836.38	1548.88
<i>Chrysothamnus nauseosus</i>	101.09	135.03	55.32
<i>Gutierrezia sarothrae</i>	277.99	621.13	1659.52
<i>Atriplex confertifolia</i>		54.01	
<i>Cercocarpus ledifolius</i>		54.01	
<i>Yucca harrmaniae</i>			55.32
Total	<u>1516.31</u>	<u>2700.56</u>	<u>3319.03</u>

NOTES:

- 1) As previous years, density measurements were included for comparison.
- 2) Like 1993-95, there was more density of shrubs here than in Cell 2.
- 3) Also, this appeared the best cell when compared to Cells 1 & 2.
- 4) Condition: excellent.
- 5) Site had good diversity of grasses.
- 6) Two, 200 ft transects were randomly placed in the cell. Samples were taken randomly at right angles to the transect lines every 30 ft.
- 7) Sampled for cover (n=15), freq. (n=15) & density (n=15).
- 8) Used the point-quarter method for density.
- 9) Cell 3 was best (cover & diversity) then Cell 1, then Cell 2.

**UP&L-COTTONWOOD MINE**

Cell #3

Old Waste Rock (Interim Reveg '85)

Slope: 0-1 deg

Exposure: E

Sample Date: 2-6 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00

**SHRUBS**

Atriplex canescens	5.00	0.00	0.00	55.00	25.00	15.00
Gutierrezia sarothrae	15.00	10.00	5.00	5.00	0.00	10.00

**FORBS****GRASSES**

Bromus tectorum	0.00	0.00	0.00	0.00	0.00	10.00
Hilaria jamesii	0.00	20.00	0.00	0.00	0.00	0.00
Elymus smithii	0.00	0.00	0.00	0.00	10.00	0.00
Agropyron cristatum	0.00	0.00	0.00	10.00	25.00	0.00
Elymus lanceolatus	15.00	5.00	5.00	5.00	10.00	15.00
Stipa hymenoides	15.00	10.00	5.00	0.00	0.00	0.00
Poa pratensis	0.00	0.00	0.00	0.00	0.00	0.00
Elymus spicatus	0.00	0.00	0.00	0.00	0.00	0.00

**COVER**

Total Living Cover	50.00	45.00	15.00	75.00	70.00	50.00
Litter	10.00	10.00	5.00	5.00	5.00	25.00
Bareground	5.00	5.00	70.00	10.00	5.00	10.00
Rock	35.00	40.00	10.00	10.00	20.00	15.00

**% COMPOSITION**

Shrubs	40.00	22.22	33.33	80.00	35.71	50.00
Forbs	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	60.00	77.78	66.67	20.00	64.29	50.00

7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00
5.00	20.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00
5.00	0.00	0.00	10.00	0.00	0.00	10.00	15.00	10.00
0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	5.00	0.00	0.00	10.00	0.00
5.00	10.00	0.00	15.00	0.00	10.00	10.00	0.00	20.00
0.00	0.00	0.00	0.00	10.00	15.00	25.00	0.00	0.00
25.00	10.00	15.00	20.00	5.00	30.00	10.00	5.00	10.00
5.00	25.00	20.00	5.00	30.00	0.00	15.00	0.00	10.00
5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
50.00	65.00	35.00	65.00	50.00	55.00	70.00	50.00	50.00
10.00	10.00	10.00	10.00	15.00	10.00	10.00	10.00	10.00
15.00	15.00	15.00	15.00	20.00	10.00	5.00	20.00	20.00
25.00	10.00	40.00	10.00	15.00	25.00	15.00	20.00	20.00
20.00	30.77	0.00	15.38	0.00	0.00	14.29	70.00	20.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80.00	69.23	100.00	84.62	100.00	100.00	85.71	30.00	80.00

UP&L-COTTONWOOD MINE  
 Cell #3  
 Old Waste Rock (Interim Reveg '85)  
 Slope: 0-1 deg  
 Exposure: E  
 Sample Date: 2-6 Sept 96

Mean	SDev	Freq	
9.67	14.88	46.67	SHRUBS
6.33	5.31	66.67	<i>Atriplex canescens</i> <i>Gutierrezia sarothrae</i>

### FORBS

			GRASSES
1.33	3.40	13.33	<i>Bromus tectorum</i>
2.33	5.44	20.00	<i>Hilaria jamesii</i>
5.33	6.45	46.67	<i>Elymus smithii</i>
5.67	8.92	33.33	<i>Agropyron cristatum</i>
12.33	7.50	100.00	<i>Elymus lanceolatus</i>
9.33	9.46	66.67	<i>Stipa hymenoides</i>
0.33	1.25	6.67	<i>Poa pratensis</i>
0.33	1.25	6.67	<i>Elymus spicatus</i>
			COVER
53.00	14.70		Total Living Cover
10.33	4.64		Litter
16.00	15.41		Bareground
20.67	10.14		Rock
			% COMPOSITION
28.78	23.16		Shrubs
0.00	0.00		Forbs
71.22	23.16		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Cell #4

AREA: Cottonwood Mine Old Waste Rock Area ('86 Interim Reveg)

DATE: Sept 2-6, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 0 - 1 deg

EXPOSURE: E

**ANIMAL USE/DISTURBANCE:**

**EROSION:**

COVER: Approx. 35%

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

*Gutierrezia sarothrae*

*Lactuca serriola*

*Machaeranthera grindeloides*

*Agropyron cristatum*

*Bromus tectorum*

*Elymus spicatus*

*Elymus smithii*

*Elymus hispidus*

*Elymus lanceolatus*

*Hilaria jamesii*

*Stipa comata*

WOODY SPECIES DENSITY:

	Individuals/Acre	
	<u>1995</u>	<u>1996</u>
<i>Atriplex canescens</i>	43.56	116.16
<i>Cercocarpus ledifolius</i>	21.78	
<i>Chrysothamnus nauseosus</i>	32.67	46.46
<i>Gutierrezia sarothrae</i>	21.78	92.93
TOTAL	<u>119.79</u>	<u>255.55</u>

- NOTES:      1) Put down one long transect, sampled with a random number at right angle every 25 ft.
- 2) Cover (n=15), density (n=15).
- 3) Good grass cover, but not many weeds.
- 4) Few shrubs.
- 5) For shrub density we used 5' x 25' belts. Pt. quarter would not have been practical
- 6) In order from good/fair/poor:  
Cell 4/Cell 5/Cell 6.

**UP&L-COTTONWOOD MINE**

Cell #4

Old Waste Rock (Interim Reveg '86)

Slope: 0-1 deg

Exposure: NE

Sample Date: 2-6 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00

**SHRUBS**

<i>Chrysothamnus nauseosus</i>	0.00	0.00	0.00	0.00	0.00	0.00
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**FORBS**

<i>Sphaeralcea coccinea</i>	0.00	0.00	0.00	0.00	0.00	0.00
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**GRASSES**

<i>Elymus spicatus</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Stipa comata</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus lanceolatus</i>	10.00	10.00	35.00	20.00	25.00	20.00
<i>Agropyron cristatum</i>	15.00	10.00	10.00	10.00	0.00	15.00
<i>Hilaria jamesii</i>	0.00	10.00	10.00	10.00	0.00	0.00
<i>Stipa hymenoides</i>	10.00	0.00	0.00	0.00	0.00	0.00
<i>Poa pratensis</i>	0.00	10.00	0.00	0.00	0.00	0.00
<i>Elymus smithii</i>	0.00	0.00	10.00	0.00	10.00	5.00

**COVER**

Total Living Cover	35.00	40.00	65.00	40.00	35.00	40.00
Litter	10.00	15.00	10.00	10.00	10.00	10.00
Bareground	30.00	10.00	10.00	25.00	25.00	15.00
Rock	25.00	35.00	15.00	25.00	30.00	35.00

**% COMPOSITION**

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	100.00	100.00	100.00	100.00	100.00	100.00

7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00
0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
0.00	0.00	5.00	10.00	5.00	0.00	5.00	0.00	0.00
5.00	0.00	0.00	5.00	0.00	5.00	0.00	0.00	0.00
15.00	10.00	15.00	15.00	20.00	20.00	30.00	25.00	10.00
0.00	10.00	10.00	0.00	10.00	20.00	0.00	25.00	25.00
0.00	0.00	0.00	5.00	0.00	5.00	5.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	10.00	10.00	10.00	10.00	5.00	10.00	0.00	10.00
20.00	60.00	40.00	45.00	45.00	60.00	50.00	50.00	50.00
20.00	15.00	20.00	10.00	15.00	20.00	25.00	25.00	15.00
20.00	15.00	20.00	25.00	15.00	5.00	10.00	15.00	15.00
40.00	10.00	20.00	20.00	25.00	15.00	15.00	10.00	20.00
0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00	90.00

UP&L-COTTONWOOD MINE  
 Cell #4  
 Old Waste Rock (Interim Reveg '86)  
 Slope: 0-1 deg  
 Exposure: NE  
 Sample Date: 2-6 Sept 96

Mean	SDev	Freq	
2.00	7.48	6.67	<b>SHRUBS</b> <i>Chrysothamnus nauseosus</i>
0.33	1.25	6.67	<b>FORBS</b> <i>Sphaeralcea coccinea</i>
			<b>GRASSES</b>
1.67	2.98	26.67	<i>Elymus spicatus</i>
1.00	2.00	20.00	<i>Stipa comata</i>
18.67	7.41	100.00	<i>Elymus lanceolatus</i>
10.67	8.14	73.33	<i>Agropyron cristatum</i>
3.00	4.00	40.00	<i>Hilaria jamesii</i>
1.00	2.71	13.33	<i>Stipa hymenoides</i>
0.67	2.49	6.67	<i>Poa pratensis</i>
6.00	4.55	66.67	<i>Elymus smithii</i>
			<b>COVER</b>
45.00	11.11		Total Living Cover
15.33	5.31		Litter
17.00	6.78		Bareground
22.67	8.92		Rock
			<b>% COMPOSITION</b>
3.33	12.47		Shrubs
0.67	2.49		Forbs
96.00	12.54		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Cell #5 '89 (Reseeded) 93

AREA: Cottonwood Mine Old Waste Rock Area (Interim Reveg)

DATE: Sept. 2-6, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 0-1 deg

EXPOSURE: E

ANIMAL USE/DISTURBANCE:

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

*Atriplex canescens*

*Kochia scoparia*

*Malcomia africana*

*Sisymbrium altissimum*

*Agropyron cristatum*

*Bromus tectorum*

*Elymus lanceolatus*

*Hordeum jubatum*

*Stipa comata*

WOODY SPECIES DENSITY:

	Individuals/Acre	
	<u>1995</u>	<u>1996</u>
<i>Atriplex canescens</i>	609.84	627.26
<i>Cercocarpus ledifolius</i>	10.89	
<i>Chrysothamnus nauseosus</i>	10.89	
TOTAL	<u>631.62</u>	<u>627.26</u>

- NOTES:
- 1) For cover (n=15) and density (n=15) we sampled every 15'.
  - 2) For density we used 5'x 25' belt transects.
  - 3) Put down one long transect, sampled with a random number at right angle every 25 ft.
  - 4) In order from good/fair/poor:  
Cell 4/Cell 5/Cell 6.

## UP&amp;L - COTTONWOOD MINE

Cell #5 '89

Old Waste Rock (Interim Reveg - Reseeded '93)

Slope: 0-1 deg

Exposure: E

Sample Date: 2-6 Sept 96	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
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**TREES & SHRUBS**

Atriplex canescens	20.00	30.00	0.00	5.00	15.00	0.00	0.00	0.00
Artemisia tridentata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**FORBS**

Sisymbrium altissimum	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
Kochia scoparia	0.00	0.00	10.00	25.00	5.00	10.00	0.00	0.00
Malcomia africana	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
Salsola pestifer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**GRASSES**

Bromus tectorum	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
Stipa hymenoides	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00
Agropyron cristatum	10.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Stipa comata	0.00	5.00	20.00	5.00	10.00	0.00	10.00	65.00
Elymus lanceolatus	15.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
Hordeum jubatum	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00

**COVER**

Total Living Cover	45.00	35.00	40.00	40.00	40.00	35.00	25.00	65.00
Litter	15.00	10.00	20.00	10.00	25.00	25.00	25.00	10.00
Bareground	30.00	20.00	10.00	25.00	10.00	25.00	30.00	5.00
Rock	10.00	35.00	30.00	25.00	25.00	15.00	20.00	20.00

**% COMPOSITION**

Shrubs	44.44	85.71	0.00	12.50	37.50	0.00	0.00	0.00
Forbs	0.00	0.00	25.00	62.50	12.50	71.43	40.00	0.00
Grasses	55.56	14.29	75.00	25.00	50.00	28.57	60.00	100.00

9.00	10.00	11.00	12.00	13.00	14.00	15.00	Mean	SDev	Freq
0.00	0.00	0.00	15.00	0.00	10.00	5.00	6.67	9.07	46.67
5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25	6.67
0.00	0.00	0.00	15.00	0.00	10.00	20.00	4.00	6.88	26.67
0.00	0.00	10.00	0.00	0.00	0.00	5.00	4.33	6.80	40.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	2.49	6.67
0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.33	1.25	6.67
0.00	0.00	0.00	0.00	10.00	0.00	0.00	1.33	3.40	13.33
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25	6.67
5.00	10.00	0.00	0.00	0.00	0.00	0.00	2.33	4.03	26.67
20.00	30.00	0.00	0.00	0.00	0.00	0.00	11.00	17.05	53.33
5.00	0.00	15.00	10.00	0.00	20.00	10.00	5.67	6.80	46.67
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25	6.67
35.00	40.00	25.00	40.00	15.00	40.00	40.00	37.33	10.62	
10.00	20.00	25.00	15.00	15.00	25.00	20.00	18.00	6.00	
15.00	15.00	25.00	30.00	25.00	20.00	20.00	20.33	7.63	
40.00	25.00	25.00	15.00	45.00	15.00	20.00	24.33	9.46	
14.29	0.00	0.00	37.50	0.00	25.00	12.50	17.96	23.72	
0.00	0.00	40.00	37.50	33.33	25.00	62.50	27.32	24.28	
85.71	100.00	60.00	25.00	66.67	50.00	25.00	54.72	26.69	

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Cell #6 '89 (Reseeded) '93

AREA: Cottonwood Mine Waste Rock Area (Interim Reveg)

DATE: Sept. 2-6, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 0-1 deg.

EXPOSURE: E

ANIMAL USE/DISTURBANCE:

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

*Atriplex canescens*

*Kochia scoparia*

*Malcomia africana*

*Sisymbrium altissimum*

*Halogeton glomeratus*

*Agropyron cristatum*

*Bromus tectorum*

*Elymus lanceolatus*

*Stipa comata*

*Stipa hymenoides*

WOODY SPECIES DENSITY:

	Individuals/Acre	
	<u>1995</u>	<u>1996</u>
<i>Atriplex canescens</i>	500.94	627.26
<i>Gutierrezia sarothrae</i>	10.89	
<b>TOTAL</b>	<b><u>511.83</u></b>	<b><u>627.26</u></b>

- NOTES:
- 1) As last year, there were a lot of weed species and only a few shrub individuals in this cell.
  - 2) We sampled for cover ( $n=15$ ) and density ( $n=15$ ) similar to Cell #5.
  - 3) For density we used 5'x 25' belts.
  - 4) Put down one long transect, sampled with a random number at right angle every 25 ft.
  - 5) There were areas of good grass cover, others of fourwinged saltbush, others of weeds.
  - 6) In order from good/fair/poor:  
Cell 4/Cell 5/Cell 6.

**UP&L - COTTONWOOD MINE**

Cell #6 '89

Old Waste Rock (Interim Reveg - Reseeded '93)

Slope: 0-1 deg

Exposure: E

Sample Date: 2-6 Sept 96	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
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**TREES & SHRUBS**

Atriplex canescens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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**FORBS**

Sisymbrium altissimum	0.00	0.00	0.00	0.00	5.00	5.00	0.00	0.00
Malcomia africana	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kochia scoparia	10.00	25.00	10.00	30.00	25.00	15.00	25.00	20.00
Halogeton glomeratus	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00

**GRASSES**

Stipa hymenoides	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
Stipa comata	0.00	0.00	0.00	0.00	0.00	0.00	5.00	5.00
Agropyron cristatum	15.00	5.00	0.00	0.00	0.00	5.00	5.00	0.00
Elymus lanceolatus	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Bromus tectorum	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00

**COVER**

Total Living Cover	40.00	35.00	15.00	35.00	40.00	25.00	35.00	25.00
Litter	10.00	15.00	10.00	25.00	10.00	25.00	20.00	25.00
Bareground	10.00	20.00	50.00	25.00	20.00	25.00	20.00	25.00
Rock	40.00	30.00	25.00	15.00	30.00	25.00	25.00	25.00

**% COMPOSITION**

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	62.50	71.43	100.00	85.71	75.00	80.00	71.43	80.00
Grasses	37.50	28.57	0.00	14.29	25.00	20.00	28.57	20.00

9.00	10.00	11.00	12.00	13.00	14.00	15.00	Mean	SDev	Freq
0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.33	1.25	6.67
0.00	0.00	0.00	0.00	0.00	25.00	15.00	3.33	6.99	33.33
0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	3.74	6.67
3.00	20.00	15.00	15.00	0.00	10.00	20.00	16.20	8.26	93.33
2.00	0.00	0.00	0.00	0.00	5.00	0.00	0.80	1.72	20.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25	6.67
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	1.70	13.33
0.00	5.00	5.00	5.00	40.00	0.00	0.00	5.67	9.98	53.33
0.00	0.00	15.00	5.00	0.00	0.00	0.00	1.67	3.94	20.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	2.49	6.67
5.00	25.00	35.00	30.00	40.00	40.00	35.00	30.67	9.81	
10.00	25.00	20.00	10.00	20.00	10.00	10.00	16.33	6.45	
60.00	25.00	20.00	35.00	15.00	25.00	35.00	27.33	12.63	
25.00	25.00	25.00	25.00	25.00	25.00	20.00	25.67	5.12	
0.00	0.00	0.00	16.67	0.00	0.00	0.00	1.11	4.16	
100.00	80.00	42.86	50.00	0.00	100.00	100.00	73.26	25.96	
0.00	20.00	57.14	33.33	100.00	0.00	0.00	25.63	25.29	

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Cell #7 '92 Partial Cell #7 '93

AREA: Cottonwood Mine Old Waste Rock Area (Interim Reveg)

DATE: Sept. 2-6, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 0 - 2 deg

EXPOSURE: E

ANIMAL USE/DISTURBANCE: Slight

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

*Atriplex canescens*  
*Artemisia tridentata*  
*Gutierrezia sarothrae*

*Kochia scoparia*  
*Malcomia africana*  
*Sisymbrium altissimum*

*Agropyron cristatum*  
*Bromus tectorum*  
*Elymus lanceolatus*  
*Stipa comata*  
*Stipa hymenoides*

WOODY SPECIES DENSITY:

	Individuals/Acre	
	<u>1995</u>	<u>1996</u>
<i>Atriplex canescens</i>	1591.94	2044.46
<i>Artemisia tridentata</i>	255.64	23.23
TOTAL	<u>1847.58</u>	<u>2067.65</u>

- NOTES:
- 1) For cover ( $n=15$ ) and density ( $n=15$ ) we placed one long transect and put quadrats down randomly every 15' with random numbers.
  - 2) For density we used 5'x 25' belt transects.
  - 3) There were quite a few fourwing saltbush, with patches of weeds and grasses.
  - 4) Did not see the other shrubs that we saw last year.

**UP&L - COTTONWOOD MINE**

Cell #7 '92, Partial Cell #7 '93

Old Waste Rock (Interim Reveg - Reseeded '93)

Slope: 0-2 deg

Exposure: E

Sample Date: 2-6 Sept 96	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
<b>TREES &amp; SHRUBS</b>								
Atriplex canescens	0.00	0.00	5.00	5.00	5.00	0.00	5.00	0.00
Artemisia tridentata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
Gutierrezia sarothrae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>FORBS</b>								
Sisymbrium altissimum	0.00	0.00	0.00	0.00	10.00	15.00	0.00	10.00
Kochia scoparia	5.00	20.00	0.00	0.00	5.00	10.00	0.00	0.00
Malcomia africana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>GRASSES</b>								
Agropyron cristatum	0.00	15.00	10.00	30.00	5.00	0.00	10.00	10.00
Stipa comata	20.00	0.00	25.00	5.00	10.00	0.00	15.00	0.00
Stipa hymenoides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	5.00	0.00	0.00	0.00	0.00	0.00	5.00	5.00
Bromus tectorum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>COVER</b>								
Total Living Cover	30.00	35.00	40.00	40.00	35.00	25.00	35.00	30.00
Litter	15.00	20.00	5.00	20.00	20.00	10.00	10.00	10.00
Bareground	35.00	20.00	45.00	20.00	25.00	40.00	30.00	40.00
Rock	20.00	25.00	10.00	20.00	20.00	25.00	25.00	20.00
<b>% COMPOSITION</b>								
Shrubs	0.00	0.00	12.50	12.50	14.29	0.00	14.29	16.67
Forbs	16.67	57.14	0.00	0.00	42.86	100.00	0.00	33.33
Grasses	83.33	42.86	87.50	87.50	42.86	0.00	85.71	50.00

9.00	10.00	11.00	12.00	13.00	14.00	15.00	Mean	SDev	Freq
2.00	0.00	5.00	0.00	5.00	0.00	0.00	2.13	2.39	46.67
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25	6.67
0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.33	1.25	6.67
<hr/>									
0.00	0.00	5.00	10.00	0.00	0.00	0.00	3.33	5.06	33.33
0.00	0.00	0.00	15.00	0.00	0.00	0.00	3.67	6.18	33.33
10.00	0.00	0.00	0.00	15.00	10.00	0.00	2.33	4.78	20.00
<hr/>									
10.00	20.00	15.00	0.00	0.00	0.00	0.00	8.33	8.69	60.00
8.00	20.00	0.00	0.00	0.00	20.00	0.00	8.20	9.06	53.33
0.00	0.00	0.00	0.00	5.00	0.00	30.00	2.33	7.50	13.33
0.00	0.00	0.00	0.00	15.00	5.00	0.00	2.33	4.03	33.33
0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.33	1.25	6.67
<hr/>									
30.00	40.00	30.00	25.00	40.00	35.00	35.00	33.67	4.99	
10.00	25.00	20.00	20.00	10.00	10.00	10.00	14.33	5.73	
40.00	25.00	25.00	30.00	25.00	30.00	35.00	31.00	7.57	
20.00	10.00	25.00	25.00	25.00	25.00	20.00	21.00	4.90	
<hr/>									
6.67	0.00	16.67	0.00	12.50	0.00	14.29	8.02	6.91	
33.33	0.00	16.67	100.00	37.50	28.57	0.00	31.07	32.27	
60.00	100.00	66.67	0.00	50.00	71.43	85.71	60.90	29.59	

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Berm 1

AREA: Cottonwood Mine Old Waste Rock Area (1983 Interim Reveg)

DATE: Sept. 4, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 1-20 deg.

EXPOSURE: E

ANIMAL USE/DISTURBANCE:

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex canescens*  
*Chrysothamnus nauseosus*  
*Gutierrezia sarothrae*

*Halogeton glomeratus*  
*Malcomia africana*  
*Salsola pestifer*

*Bromus tectorum*  
*Elymus lanceolatus*  
*Bromus tectorum*  
*Agropyron cristatum*  
*Elymus smithii*  
*Poa secunda*  
*Sitanion hystrrix*  
*Stipa hymenoides*

DENSITY:

	Individuals/Acre		
	<u>1994</u>	<u>1995</u>	<u>1996</u>
<i>Atriplex canescens</i>	325.36	457.38	441.41
<i>Chrysanthus nauseosus</i>	859.88	1132.56	1417.15
<i>Ephedra viridis</i>	139.44	43.56	23.23
<i>Gutierrezia sarothrae</i>	197.54	98.01	696.96
<i>Purshia tridentata</i>	11.62		
<i>Chrysanthus viscidiflorus</i>		10.89	
Total	<u>1533.84</u>	<u>1742.40</u>	<u>2578.75</u>

- NOTES:
- 1) As mentioned last year, poor shrub and perennial forb establishment. There were quite a few exotic weeds. The north end is worse for shrub cover and density.
  - 2) We sampled for cover (n=15), frequency (n=15), and density (n=15).
  - 3) For density we used 5'X 25' belt transects. The point-quarter method would have been impractical.
  - 4) 1994 and 1995 woody species density results were included for comparisons.
  - 5) We sampled regularly every 25' after placing two 200 ft transects randomly.

**UP&L-COTTONWOOD MINE**

Berm #1

Old Waste Rock (Interim Reveg '83)

Slope: 1-20 deg

Exposure: E

Sample Date: 4 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00

**SHRUBS**

Atriplex canescens	0.00	0.00	0.00	0.00	0.00	0.00
Ephedra viridis	0.00	0.00	0.00	0.00	0.00	0.00
Chrysothamnus nauseosus	0.00	55.00	0.00	0.00	0.00	10.00

**FORBS**

Salsola pestifer	0.00	0.00	0.00	10.00	5.00	0.00
Halogeton glomeratus	30.00	5.00	10.00	20.00	5.00	0.00
Malcomia africana	30.00	10.00	50.00	40.00	40.00	5.00

**GRASSES**

Bromus tectorum	0.00	0.00	0.00	0.00	0.00	0.00
Agropyron cristatum	0.00	0.00	0.00	0.00	0.00	5.00
Stipa hymenoides	0.00	0.00	0.00	0.00	0.00	0.00

**COVER**

Total Living Cover	60.00	70.00	60.00	70.00	50.00	20.00
Litter	10.00	10.00	10.00	5.00	10.00	10.00
Bareground	10.00	10.00	5.00	10.00	20.00	20.00
Rock	20.00	10.00	25.00	15.00	20.00	50.00

**% COMPOSITION**

Shrubs	0.00	78.57	0.00	0.00	0.00	50.00
Forbs	100.00	21.43	100.00	100.00	100.00	25.00
Grasses	0.00	0.00	0.00	0.00	0.00	25.00

7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00
0.00	0.00	15.00	0.00	0.00	5.00	5.00	0.00	60.00
0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	5.00
30.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
10.00	20.00	35.00	65.00	45.00	35.00	20.00	50.00	25.00
0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
0.00	20.00	0.00	0.00	5.00	10.00	0.00	5.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00
40.00	60.00	50.00	65.00	60.00	50.00	45.00	60.00	90.00
25.00	10.00	10.00	20.00	5.00	5.00	5.00	10.00	5.00
20.00	20.00	20.00	10.00	10.00	15.00	10.00	10.00	2.00
15.00	10.00	20.00	5.00	25.00	30.00	40.00	20.00	3.00
75.00	33.33	30.00	0.00	0.00	10.00	22.22	0.00	72.22
25.00	33.33	70.00	100.00	91.67	70.00	55.56	83.33	27.78
0.00	33.33	0.00	0.00	8.33	20.00	22.22	16.67	0.00

UP&L-COTTONWOOD MINE  
 Berm #1  
 Old Waste Rock (Interim Reveg '83)  
 Slope: 1-20 deg  
 Exposure: E  
 Sample Date: 4 Sept 96

Mean	SDev	Freq	
SHRUBS			
5.67	15.04	20.00	<i>Atriplex canescens</i>
0.67	1.70	13.33	<i>Ephedra viridis</i>
7.67	15.37	26.67	<i>Chrysothamnus nauseosus</i>
FORBS			
1.33	2.87	20.00	<i>Salsola pestifer</i>
5.33	8.65	40.00	<i>Halogeton glomeratus</i>
32.00	16.51	100.00	<i>Malcomia africana</i>
GRASSES			
0.67	2.49	6.67	<i>Bromus tectorum</i>
3.00	5.42	33.33	<i>Agropyron cristatum</i>
0.33	1.25	6.67	<i>Stipa hymenoides</i>
COVER			
56.67	15.24		Total Living Cover
10.00	5.48		Litter
12.80	5.75		Bareground
20.53	12.14		Rock
% COMPOSITION			
24.76	29.36		Shrubs
66.87	31.35		Forbs
8.37	11.33		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Berm 2

AREA: Cottonwood Mine Old Waste Rock Area (1984 Interim Reveg)

DATE: Sept. 5, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 0-20 deg.

EXPOSURE: E & N

ANIMAL USE/DISTURBANCE:

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex confertifolia*

*Atriplex canescens*

*Gutierrezia sarothrae*

*Bromus tectorum*

*Elymus lanceolatus*

*Agropyron cristatum*

*Elymus smithii*

*Stipa hymenoides*

DENSITY:

	Individuals/ Acre		
	<u>1994</u>	<u>1995</u>	<u>1996</u>
<i>Artemisia tridentata</i>			46.46
<i>Atriplex canescens</i>	1917.30	3637.26	2990.88
<i>Atriplex confertifolia</i>	406.70	304.94	348.48
<i>Chrysothamnus nauseosus</i>	34.86		23.23
<i>Ephedra viridis</i>	11.62		
<i>Brickellia microphylla</i>		21.78	
<i>Gutierrezia sarothrae</i>	4241.30	1568.16	580.80
Total	<u>6611.78</u>	<u>5532.12</u>	<u>3089.86</u>

NOTES:

- 1) There was low species diversity with the good cover. Very good shrub and grass cover and density.
- 2) We sampled both exposures for cover, frequency, and density.
- 3) For density we used 5'X 25' belt transects.
- 4) We sampled for cover (n=15), frequency (n=15), and density (n=15).
- 5) 1994 and 1995 woody species density results were included for comparisons.
- 6) We sampled regularly every 25' after placing two 200 ft transects randomly.

**UP&L-COTTONWOOD MINE****Berm #2****Old Waste Rock (Interim Reveg '84)****Slope: 0-20 deg****Exposure: E & N****Sample Date: 4 Sept 96**

1.00    2.00    3.00    4.00    5.00    6.00

**SHRUBS**

Atriplex canescens	35.00	0.00	35.00	25.00	5.00	0.00
Atriplex confertifolia	0.00	0.00	0.00	0.00	0.00	0.00
Gutierrezia sarothrae	0.00	0.00	0.00	0.00	0.00	0.00

**FORBS****GRASSES**

Bromus tectorum	55.00	0.00	25.00	5.00	0.00	0.00
Stipa hymenoides	0.00	0.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	0.00	40.00	5.00	0.00	15.00	0.00
Agropyron cristatum	0.00	0.00	5.00	5.00	30.00	45.00

**COVER**

Total Living Cover	90.00	40.00	70.00	35.00	50.00	45.00
Litter	3.00	25.00	15.00	25.00	10.00	15.00
Bareground	5.00	10.00	5.00	20.00	10.00	15.00
Rock	2.00	25.00	10.00	20.00	30.00	25.00

**% COMPOSITION**

Shrubs	38.89	0.00	50.00	71.43	10.00	0.00
Forbs	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	61.11	100.00	50.00	28.57	90.00	100.00

7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00
5.00	15.00	5.00	10.00	20.00	5.00	5.00	25.00	20.00
0.00	0.00	0.00	15.00	10.00	25.00	0.00	10.00	15.00
0.00	0.00	0.00	0.00	5.00	5.00	5.00	0.00	10.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	10.00	20.00	5.00	5.00	0.00	5.00	0.00	5.00
40.00	30.00	0.00	35.00	25.00	15.00	35.00	25.00	15.00
45.00	60.00	25.00	65.00	70.00	50.00	50.00	60.00	65.00
10.00	5.00	5.00	10.00	10.00	10.00	10.00	10.00	10.00
25.00	10.00	45.00	5.00	5.00	10.00	15.00	10.00	10.00
20.00	25.00	25.00	20.00	15.00	30.00	25.00	20.00	15.00
11.11	25.00	20.00	38.46	50.00	70.00	20.00	58.33	69.23
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88.89	75.00	80.00	61.54	50.00	30.00	80.00	41.67	30.77

**UP&L-COTTONWOOD MINE**  
**Berm #2**  
**Old Waste Rock (Interim Reveg '84)**  
**Slope: 0-20 deg**  
**Exposure: E & N**  
**Sample Date: 4 Sept 96**

Mean	SDev	Freq	
			<b>SHRUBS</b>
14.00	11.58	86.67	<i>Atriplex canescens</i>
5.00	7.75	33.33	<i>Atriplex confertifolia</i>
1.67	2.98	26.67	<i>Gutierrezia sarothrae</i>

### FORBS

			<b>GRASSES</b>
6.00	14.51	26.67	<i>Bromus tectorum</i>
0.33	1.25	6.67	<i>Stipa hymenoides</i>
7.33	10.47	60.00	<i>Elymus lanceolatus</i>
20.33	15.11	80.00	<i>Agropyron cristatum</i>

			<b>COVER</b>
54.67	15.76		Total Living Cover
11.53	6.13		Litter
13.33	10.11		Bareground
20.47	7.28		Rock

			<b>% COMPOSITION</b>
35.50	24.41		Shrubs
0.00	0.00		Forbs
64.50	24.41		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Berm 3

AREA: Cottonwood Mine Old Waste Rock Area (1985 Interim Reveg)

DATE: Sept. 5, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 0-20 deg.

EXPOSURE: NE & SW

ANIMAL USE/DISTURBANCE:

EROSION: Slight

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex canescens*  
*Gutierrezia sarothrae*  
*Artemisia tridentata*  
*Ephedra viridis*

*Halogeton glomeratus*  
*Salsola pestifer*  
*Sisymbrium altissimum*

*Agropyron cristatum*  
*Bromus tectorum*  
*Elymus smithii*  
*Elymus lanceolatus*  
*Poa pratensis*  
*Stipa comata*  
*Stipa hymenoides*

DENSITY:	Individuals/Acre		
	<u>1994</u>	<u>1995</u>	<u>1996</u>
<i>Artemesia tridentata</i>			23.23
<i>Atriplex canescens</i>	3056.06	2384.91	1928.26
<i>Chrysothamnus nauseosus</i>	11.62	10.89	23.23
Total	<u>3067.68</u>	<u>2395.80</u>	<u>1974.72</u>

- NOTES:
- 1) We sampled on top of berm.
  - 2) Sample sizes: Cover (n=15), density (n=15).
  - 3) Had good shrub cover, but fair to good grass cover entire length of berm.
  - 4) Not much species diversity.
  - 5) We put down four 200 ft transects for cover and sampled regularly.
  - 6) For density we used 5 ft x 25 ft belts placed over the entire length of the berm.
  - 7) 1994 and 1995 woody species density results were included for comparisons.
  - 8) All 4-winged were quite mature and produced very good seed crop.
  - 9) With the dry summer conditions, the plants were also dry.

**UP&L-COTTONWOOD MINE****Berm #3****Old Waste Rock (Interim Reveg '85)****Slope: 0-20 deg****Exposure: NE & SW****Sample Date: 4 Sept 96**

1.00    2.00    3.00    4.00    5.00    6.00

**SHRUBS**

<i>Atriplex canescens</i>	10.00	15.00	0.00	10.00	0.00	10.00
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**FORBS**

<i>Sisymbrium altissimum</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Malcomia africana</i>	0.00	0.00	0.00	0.00	0.00	0.00

**GRASSES**

<i>Stipa hymenoides</i>	0.00	0.00	0.00	0.00	15.00	0.00
<i>Stipa comata</i>	0.00	0.00	15.00	0.00	35.00	15.00
<i>Bromus tectorum</i>	0.00	0.00	0.00	20.00	5.00	10.00
<i>Elymus lanceolatus</i>	0.00	10.00	0.00	0.00	0.00	30.00
<i>Agropyron cristatum</i>	50.00	40.00	15.00	35.00	5.00	0.00

**COVER**

Total Living Cover	60.00	65.00	30.00	65.00	60.00	65.00
Litter	10.00	15.00	5.00	20.00	10.00	10.00
Bareground	5.00	10.00	40.00	5.00	20.00	5.00
Rock	25.00	10.00	25.00	10.00	10.00	20.00

**% COMPOSITION**

Shrubs	16.67	23.08	0.00	15.38	0.00	15.38
Forbs	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	83.33	76.92	100.00	84.62	100.00	84.62

7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00
25.00	45.00	0.00	15.00	50.00	80.00	65.00	70.00	45.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
5.00	5.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	5.00	0.00	30.00	5.00	0.00	0.00	0.00	0.00
0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	5.00	30.00	25.00	10.00	10.00	5.00	10.00	0.00
60.00	65.00	60.00	70.00	65.00	90.00	70.00	80.00	65.00
20.00	10.00	10.00	10.00	10.00	5.00	20.00	5.00	10.00
10.00	10.00	10.00	5.00	5.00	2.00	5.00	5.00	5.00
10.00	15.00	20.00	15.00	20.00	3.00	5.00	10.00	20.00
41.67	69.23	0.00	21.43	76.92	88.89	92.86	87.50	69.23
0.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	15.38
58.33	30.77	66.67	78.57	23.08	11.11	7.14	12.50	15.38

UP&L-COTTONWOOD MINE  
 Berm #3  
 Old Waste Rock (Interim Reve  
 Slope: 0-20 deg  
 Exposure: NE & SW  
 Sample Date: 4 Sept 96

Mean	SDev	Freq	
29.33	26.51	80.00	SHRUBS <i>Atriplex canescens</i>

0.67	2.49	6.67	FORBS
1.33	4.99	6.67	<i>Sisymbrium altissimum</i> <i>Malcomia africana</i>

			GRASSES
3.67	8.26	20.00	<i>Stipa hymenoides</i>
5.67	9.46	40.00	<i>Stipa comata</i>
5.00	8.56	40.00	<i>Bromus tectorum</i>
3.00	7.70	20.00	<i>Elymus lanceolatus</i>
16.00	15.51	80.00	<i>Agropyron cristatum</i>

			COVER
64.67	12.17		Total Living Cover
11.33	4.99		Litter
9.47	9.16		Bareground
14.53	6.66		Rock

			% COMPOSITION
41.22	34.33		Shrubs
3.25	8.91		Forbs
55.54	33.65		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Berm 4

AREA: Cottonwood Mine Old Waste Rock Area ('86 Interim Reveg)

DATE: Sept 3, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 28 deg.

EXPOSURE: N E

ANIMAL USE/DISTURBANCE:

EROSION:

COVER: (approximately 40%)

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex canescens*  
*Chrysothamnus nauseosus*  
*Gutierrezia sarothrae*  
*Ephedra viridis*

*Sisymbrium altissimum*

*Agropyron cristatum*  
*Bromus tectorum*  
*Elymus lanceolatus*  
*Elymus spicatus*  
*Stipa hymenoides*  
*Stipa comata*

WOODY SPECIES DENSITY:

	Individuals/Acre	
	<u>1995</u>	<u>1996</u>
<i>Atriplex canescens</i>	196.02	836.35
<i>Chrysothamnus nauseosus</i>	87.12	139.39
<i>Ephedra viridis</i>	21.78	23.23
TOTAL	<u>304.92</u>	<u>998.98</u>

- NOTES:
- 1) The map showed the north berm only to sample again this year.
  - 2) North side has excellent growth and diversity.
  - 3) Some erosion control mat still remained in place.
  - 4) Sample sizes: Cover (n=15), density (n=15).
  - 5) Had good shrub cover, but poor to fair grass cover entire length of berm.
  - 6) We put down four 150 ft transects for cover and sampled using regular numbers every 10 ft.
  - 7) For density we used 5 ft x 25 ft belts placed over the entire length of the berm.

**UP&L-COTTONWOOD MINE****Berm #4****Old Waste Rock (Interim Reveg '86)****Slope: 28 deg****Exposure: NE****Sample Date: 3 Sept 96**

1.00    2.00    3.00    4.00    5.00    6.00

**SHRUBS**

<i>Atriplex canescens</i>	30.00	55.00	55.00	30.00	5.00	0.00
<i>Ephedra viridis</i>	0.00	0.00	0.00	0.00	0.00	0.00

**FORBS**

<i>Sisymbrium altissimum</i>	5.00	0.00	0.00	0.00	0.00	0.00
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**GRASSES**

<i>Bromus tectorum</i>	0.00	0.00	0.00	15.00	0.00	0.00
<i>Stipa comata</i>	0.00	0.00	0.00	0.00	15.00	0.00
<i>Elymus lanceolatus</i>	0.00	0.00	0.00	20.00	10.00	0.00
<i>Agropyron cristatum</i>	0.00	30.00	25.00	0.00	20.00	55.00

**COVER**

Total Living Cover	35.00	85.00	80.00	65.00	50.00	55.00
Litter	20.00	5.00	5.00	10.00	25.00	20.00
Bareground	20.00	5.00	5.00	5.00	5.00	5.00
Rock	25.00	5.00	10.00	20.00	20.00	20.00

**% COMPOSITION**

Shrubs	85.71	64.71	68.75	46.15	10.00	0.00
Forbs	14.29	0.00	0.00	0.00	0.00	0.00
Grasses	0.00	35.29	31.25	53.85	90.00	100.00

7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00
0.00	5.00	55.00	0.00	0.00	10.00	0.00	0.00	10.00
0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00
5.00	10.00	0.00	30.00	0.00	0.00	0.00	0.00	5.00
35.00	30.00	10.00	15.00	40.00	20.00	40.00	20.00	25.00
40.00	45.00	65.00	45.00	40.00	30.00	45.00	40.00	40.00
10.00	10.00	20.00	10.00	5.00	10.00	10.00	10.00	10.00
25.00	10.00	10.00	20.00	20.00	10.00	10.00	25.00	25.00
25.00	35.00	5.00	25.00	35.00	50.00	35.00	25.00	25.00
0.00	11.11	84.62	0.00	0.00	33.33	11.11	0.00	25.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	88.89	15.38	100.00	100.00	66.67	88.89	100.00	75.00

**UP&L-COTTONWOOD MINE**  
**Berm #4**  
**Old Waste Rock (Interim Reveg '86)**  
**Slope: 28 deg**  
**Exposure: NE**  
**Sample Date: 3 Sept 96**

Mean	SDev	Freq	
			<b>SHRUBS</b>
17.00	21.28	60.00	<i>Atriplex canescens</i>
0.33	1.25	6.67	<i>Ephedra viridis</i>

0.33	1.25	6.67	<b>FORBS</b>
			<i>Sisymbrium altissimum</i>

			<b>GRASSES</b>
1.00	3.74	6.67	<i>Bromus tectorum</i>
2.33	6.02	13.33	<i>Stipa comata</i>
5.33	8.65	40.00	<i>Elymus lanceolatus</i>
24.33	14.48	86.67	<i>Agropyron cristatum</i>

			<b>COVER</b>
50.67	15.69		Total Living Cover
12.00	6.00		Litter
13.33	7.89		Bareground
24.00	11.58		Rock
			<b>% COMPOSITION</b>
29.37	31.30		Shrubs
0.95	3.56		Forbs
69.68	33.16		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: CTW Reference Area

AREA: Cottonwood Mine Old Waste Rock Area

DATE: 4 Sept 1996

WORKERS: P. Collins, D. Collins

SLOPE: 1 - 5 deg

EXPOSURE: E

ANIMAL USE/DISTURBANCE:

EROSION: Slight, natural

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Cercocarpus montanus*  
*Ephedra viridis*  
*Juniperus osteosperma*  
*Opuntia polyacantha*  
*Pinus edulis*  
*Yucca harrmaniae*

*Lepidium montanum*  
*Descurainia pinnata*  
*Eriogonum bicolor*  
*Euphorbia fendleri*  
*Penstemon pachyphyllus*  
*Cryptantha* sp.

WOODY SPECIES DENSITY:

	Individuals/Acre		
	<u>1994</u>	<u>1995</u>	<u>1996</u>
<i>Cercocarpus montanus</i>	89.03	85.02	68.68
<i>Ephedra viridis</i>	168.17	233.79	196.23
<i>Gutierrezia sarothrae</i>	9.89	10.63	
<i>Juniperus osteosperma</i>	445.15	191.29	147.17
<i>Opuntia polyacantha</i>	89.03	63.76	68.68
<i>Pinus edulis</i>	326.44	435.71	284.53
<i>Artemisia nova</i>		10.63	
<i>Yucca harrmaniae</i>	59.35	42.51	19.62
TOTAL	<u>1187.06</u>	<u>1062.70</u>	<u>784.91</u>

Page 2  
CTW Reference Area

- NOTES:
- 1) Cover (n=20) estimated with  $m^2$  quadrats (ocular).
  - 2) Density (n=20) estimated by pt. quarter method.
  - 3) 1994-5 density data were included for comparisons between years.
  - 4) We placed 200' transect lines through the reference area.
  - 5) Cover, density and frequency were recorded every 10 ft with random numbers at rt. angles from the transect lines.
  - 6) Overstory was recorded separately. Therefore, total cover could exceed 100% (to be consistent with previous years).
  - 7) This was a dry summer year for precipitation.
  - 8) Took fewer sample this year and it seemed to show in the density results.

**UP&L-COTTONWOOD MINE**

CTW Reference Area

Old Waste Rock Area

Slope 1-5 deg

Exposure: E

Sample Date: 4 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00

**SHRUBS**

<i>Pinus edulis</i>	5.00	0.00	0.00	5.00	10.00	0.00
<i>Cercocarpus montanus</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Juniperus osterosperma</i>	0.00	0.00	0.00	0.00	0.00	3.00
<i>Ephedra viridis</i>	0.00	0.00	0.00	0.00	10.00	0.00
<i>Opuntia polyacantha</i>	0.00	0.00	5.00	0.00	0.00	0.00

**FORBS**

<i>Sisymbrium altissimum</i>	0.00	0.00	5.00	0.00	0.00	0.00
<i>Cryptantha</i> sp.	0.00	0.00	5.00	0.00	0.00	2.00
<i>Euphorbia fendleri</i>	0.00	5.00	0.00	0.00	0.00	0.00

**GRASSES****COVER**

Overstory	20.00	0.00	0.00	5.00	15.00	25.00
Understory	5.00	5.00	15.00	5.00	20.00	5.00
Litter	65.00	10.00	20.00	25.00	75.00	5.00
Bareground	20.00	25.00	15.00	50.00	3.00	80.00
Rock	10.00	60.00	50.00	20.00	2.00	10.00

**% COMPOSITION**

Shrubs	20.00	0.00	33.33	50.00	57.14	10.00
Forbs	0.00	100.00	66.67	0.00	0.00	6.67
Grasses	0.00	0.00	0.00	0.00	0.00	0.00

7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00
0.00	0.00	35.00	0.00	5.00	0.00	0.00	5.00	0.00
0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	40.00	0.00	5.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	25.00	5.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	40.00	30.00	0.00	35.00	0.00	25.00	0.00
10.00	5.00	35.00	40.00	30.00	10.00	5.00	5.00	5.00
15.00	10.00	60.00	45.00	25.00	60.00	20.00	20.00	65.00
60.00	75.00	3.00	5.00	35.00	5.00	50.00	25.00	25.00
15.00	10.00	2.00	10.00	10.00	25.00	25.00	50.00	5.00
100.00	100.00	46.67	57.14	100.00	22.22	100.00	16.67	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

16.00	17.00	18.00	19.00	20.00	Mean	SDev	Freq
0.00	5.00	15.00	0.00	0.00	4.25	8.10	40.00
0.00	0.00	0.00	20.00	0.00	1.25	4.44	10.00
0.00	0.00	0.00	0.00	5.00	3.15	8.83	25.00
0.00	0.00	0.00	5.00	10.00	2.75	6.02	25.00
5.00	0.00	0.00	0.00	0.00	0.75	1.79	15.00
<hr/>							
0.00	0.00	0.00	0.00	0.00	0.25	1.09	5.00
0.00	0.00	0.00	0.00	0.00	0.60	1.53	15.00
0.00	0.00	0.00	0.00	0.00	0.25	1.09	5.00
<hr/>							
0.00	0.00	15.00	50.00	20.00	14.00	15.54	
5.00	5.00	15.00	25.00	15.00	13.25	10.87	
25.00	20.00	70.00	70.00	35.00	37.00	23.31	
45.00	55.00	5.00	3.00	25.00	30.45	24.07	
25.00	20.00	10.00	2.00	25.00	19.30	16.30	
<hr/>							
100.00	100.00	50.00	33.33	42.86	51.97	35.37	
0.00	0.00	0.00	0.00	0.00	13.67	32.21	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Road Slopes

AREA: Cottonwood Mine New Waste Rock Area (1990 Interim)

DATE: Sept. 9-13, 1996

WORKERS: P. Collins, D. Collins

SLOPE: Variable

EXPOSURE: Variable

ANIMAL USE/DISTURBANCE: Slight

EROSION: Negligible

DOMINANT PLANT SPECIES OBSERVED:

*Artemisia tridentata*

*Atriplex canescens*

*Atriplex confertifolia*

*Ceratoides lanata*

*Opuntia polyacantha*

*Halogeton glomeratus*

*Hedysarum boreale*

*Melilotus officinalis*

*Sisymbrium altissimum*

*Lepidium montanum*

*Medicago sativa*

*Penstemon palmeri*

*Agropyron cristatum*

*Elymus lanceolatus*

*Elymus cinereus*

*Elymus spicatus*

*Stipa hymenoides*

*Bromus tectorum*

- NOTES: 1) Most of the plant species were desirable and weeds were much less common this year.  
2) This was a dry summer for prec. and the plants showed it here too.  
3) To record the quantitative data, we placed meter sq. quadrats randomly entire length of the road (n=12).  
4) We sampled on both sides of the road.  
5) Penstemon and Gt. Basin wildrye were mos common spp. in the road side drainages (wetter areas).

**UP&L-COTTONWOOD MINE**

Road Slopes

New Waste Rock Site (1990)

Slope: variable

Exposure: variable

Sample Date: 9-13 Sept 96

	1.00	2.00	3.00	4.00	5.00	6.00
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**SHRUBS**

Atriplex canescens	0.00	0.00	0.00	0.00	8.00	8.00
Ceratoides lanata	5.00	10.00	5.00	5.00	7.00	0.00
Artemisia tridentata	0.00	0.00	0.00	0.00	0.00	0.00
Atriplex confertifolia	5.00	0.00	5.00	0.00	0.00	7.00

**FORBS**

Sisymbrium altissimum	0.00	0.00	5.00	0.00	0.00	0.00
Medicago sativa	0.00	0.00	0.00	0.00	0.00	0.00
Penstemon palmeri	0.00	5.00	0.00	0.00	0.00	0.00
Melilotus officinalis	0.00	0.00	0.00	0.00	0.00	0.00

**GRASSES**

Stipa hymenoides	0.00	5.00	0.00	5.00	0.00	0.00
Elymus spicatus	10.00	15.00	0.00	15.00	25.00	30.00
Elymus cinereus	5.00	0.00	0.00	25.00	0.00	0.00
Elymus lanceolatus	0.00	0.00	5.00	0.00	0.00	0.00
Agropyron cristatum	5.00	5.00	5.00	0.00	5.00	0.00
Elymus smithii	0.00	0.00	20.00	0.00	0.00	0.00

**COVER**

Total Living Cover	30.00	40.00	45.00	50.00	45.00	45.00
Litter	10.00	10.00	10.00	10.00	10.00	10.00
Bareground	40.00	25.00	20.00	25.00	15.00	20.00
Rock	20.00	25.00	25.00	15.00	30.00	25.00

**% COMPOSITION**

Shrubs	33.33	25.00	22.22	10.00	33.33	33.33
Forbs	0.00	12.50	11.11	0.00	0.00	0.00
Grasses	66.67	62.50	66.67	90.00	66.67	66.67

7.00	8.00	9.00	10.00	11.00	12.00	Mean	SDev	Freq
0.00	0.00	0.00	5.00	15.00	0.00	3.00	4.74	8.33
3.00	0.00	5.00	5.00	5.00	5.00	4.58	2.60	83.33
0.00	0.00	5.00	0.00	0.00	0.00	0.42	1.38	8.33
0.00	0.00	0.00	0.00	5.00	0.00	1.83	2.64	33.33
0.00	0.00	0.00	0.00	0.00	0.00	0.42	1.38	8.33
2.00	0.00	0.00	0.00	0.00	0.00	0.17	0.55	8.33
0.00	20.00	0.00	0.00	0.00	5.00	2.50	5.59	25.00
0.00	0.00	0.00	5.00	0.00	0.00	0.42	1.38	8.33
20.00	0.00	0.00	0.00	0.00	0.00	2.50	5.59	25.00
0.00	0.00	35.00	20.00	15.00	40.00	17.08	12.98	75.00
0.00	30.00	5.00	0.00	0.00	5.00	5.83	9.97	41.67
10.00	0.00	0.00	0.00	5.00	0.00	1.67	3.12	25.00
0.00	0.00	0.00	0.00	5.00	0.00	2.08	2.47	41.67
0.00	0.00	0.00	0.00	0.00	0.00	1.67	5.53	8.33
35.00	50.00	50.00	35.00	50.00	55.00	44.17	7.31	
10.00	25.00	10.00	5.00	5.00	10.00	10.42	4.77	
20.00	10.00	15.00	35.00	20.00	20.00	22.08	8.03	
35.00	15.00	25.00	25.00	25.00	15.00	23.33	5.89	
8.57	0.00	20.00	28.57	50.00	9.09	22.79	13.52	
5.71	40.00	0.00	14.29	0.00	9.09	7.73	11.12	
85.71	60.00	80.00	57.14	50.00	81.82	69.49	11.72	

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Topsoil Stockpiles

AREA: Cottonwood Mine New Waste Rock Area (1990 Interim)

DATE: Sept. 9-13, 1996

WORKERS: P. Collins, D. Collins

SLOPE: Variable

EXPOSURE: Variable

ANIMAL USE/DISTURBANCE: Slight

EROSION: Slight

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex canescens*  
*Atriplex confertifolia*  
*Ceratoides lanata*

*Hedysarum boreale*  
*Malcomia africana*  
*Melilotus officinalis*  
*Penstemon palmeri*  
*Salsola pestifer*

*Elymus lanceolatus*  
*Elymus cinereus*  
*Elymus smithii*  
*Elymus spicatus*  
*Stipa hymenoides*  
*Agropyron cristatum*  
*Sitanion hystrix*  
*Stipa hymenoides*  
*Bromus tectorum*

- NOTES: 1) Like previous two years, we sampled 2 piles. Both desirable and weedy species were present, but the weeds were a lot less common.  
2) The data of the 2 piles were combined on the summary sheets.  
3) All areas had good representation of growth.  
4) We placed quadrats randomly on 2 piles (n=10).  
5) There was good species diversity.  
6) Dry summer.

**UP&L-COTTONWOOD MINE**

Topsoil Stockpiles

New Waste Rock Site (1990)

Slope: variable

Exposure: variable

Sample Date: 9-13 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00

**SHRUBS**

Ceratoides lanata	0.00	0.00	5.00	5.00	0.00	5.00
Atriplex canescens	5.00	20.00	10.00	10.00	20.00	5.00
Atriplex confertifolia	0.00	0.00	0.00	0.00	0.00	0.00

**FORBS**

Malcomia africana	0.00	5.00	25.00	25.00	0.00	0.00
Penstemon palmeri	5.00	0.00	0.00	0.00	0.00	0.00

**GRASSES**

Stipa hymenoides	0.00	0.00	0.00	5.00	0.00	0.00
Bromus tectorum	0.00	0.00	0.00	0.00	10.00	0.00
Elymus lanceolatus	0.00	5.00	0.00	0.00	0.00	5.00
Elymus cinereus	5.00	0.00	0.00	0.00	0.00	0.00
Elymus smithii	0.00	0.00	0.00	0.00	0.00	5.00
Agropyron cristatum	0.00	0.00	0.00	0.00	0.00	5.00
Elymus spicatus	25.00	5.00	10.00	0.00	5.00	5.00

**COVER**

Total Living Cover	40.00	35.00	50.00	45.00	35.00	30.00
Litter	10.00	10.00	10.00	10.00	10.00	5.00
Bareground	20.00	35.00	20.00	20.00	30.00	15.00
Rock	30.00	20.00	20.00	25.00	25.00	50.00

**% COMPOSITION**

Shrubs	12.50	57.14	30.00	33.33	57.14	33.33
Forbs	12.50	14.29	50.00	55.56	0.00	0.00
Grasses	75.00	28.57	20.00	11.11	42.86	66.67

7.00	8.00	9.00	10.00	Mean	SDev	Freq
0.00	10.00	5.00	10.00	4.00	3.74	60.00
15.00	0.00	0.00	0.00	8.50	7.43	70.00
5.00	0.00	0.00	0.00	0.50	1.50	10.00
<hr/>						
0.00	0.00	0.00	0.00	5.50	9.86	30.00
10.00	0.00	5.00	0.00	2.00	3.32	30.00
<hr/>						
0.00	5.00	5.00	0.00	1.50	2.29	30.00
0.00	0.00	0.00	0.00	1.00	3.00	10.00
0.00	0.00	0.00	0.00	1.00	2.00	20.00
0.00	0.00	0.00	5.00	1.00	2.00	20.00
0.00	0.00	0.00	0.00	0.50	1.50	10.00
0.00	5.00	5.00	0.00	1.50	2.29	30.00
10.00	0.00	10.00	25.00	9.50	8.50	80.00
<hr/>						
40.00	20.00	30.00	40.00	36.50	8.08	
10.00	10.00	10.00	10.00	9.50	1.50	
25.00	50.00	20.00	15.00	25.00	10.25	
25.00	20.00	40.00	35.00	29.00	9.43	
<hr/>						
50.00	50.00	16.67	25.00	36.51	15.43	
25.00	0.00	16.67	0.00	17.40	19.55	
25.00	50.00	66.67	75.00	46.09	22.80	
<hr/>						

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Subsoil Piles

AREA: Cottonwood Mine New Waste Rock Area (1990 Interim)

DATE: Sept. 9-13, 1996

WORKERS: P. Collins, D. Collins

SLOPE: Variable

EXPOSURE: Variable

ANIMAL USE/DISTURBANCE:

EROSION: Slight to moderate

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Artemisia tridentata*

*Atriplex canescens*

*Atriplex confertifolia*

*Ceratoides lanata*

*Halogeton glomeratus*

*Salsola pestifer*

*Malcomia africana*

*Bromus tectorum*

*Elymus lanceolatus*

*Elymus cinereus*

*Stipa hymenoides*

*Sitanion hystrrix*

*Elymus spicatus*

- NOTES: 1) On these piles if we list by total desirable cover, it would be south (worse) to north (best).  
2) Sloped areas that were left unmulched had about 90% weed cover; sloped areas that were mulched had less than 50% weeds. The best results were the flatter tops with mulch. They comprised less than 25% weeds - but in the depressions (gouges), there were nearly 100% desirable species.  
3) The areas with erosion control mat has the best representation of shrub growth.  
4) We sampled randomly on all piles combining the data for summaries (n=10)  
5) Some area on the no. side had almost no veg. (see photograph). Maybe it's been disturbed.

**UP&L-COTTONWOOD MINE**

Subsoil Piles

New Waste Rock Site (1990)

Slope: variable

Exposure: variable

Sample Date: 9-13 Sept 96

1.00      2.00      3.00      4.00      5.00      6.00

**SHRUBS**

Atriplex canescens	5.00	5.00	5.00	5.00	5.00	5.00
Ceratoides lanata	0.00	0.00	0.00	10.00	5.00	0.00
Atriplex confertifolia	0.00	0.00	5.00	0.00	5.00	10.00

**FORBS**

Halogeton glomeratus	0.00	0.00	5.00	5.00	0.00	0.00
Salsola pestifer	0.00	8.00	0.00	0.00	0.00	0.00
Malcomia africana	10.00	0.00	10.00	0.00	0.00	0.00

**GRASSES**

Elymus spicatus	0.00	0.00	0.00	5.00	5.00	0.00
Elymus lanceolatus	20.00	2.00	0.00	15.00	10.00	15.00
Sitanion hystris	0.00	0.00	0.00	0.00	0.00	5.00

**COVER**

Total Living Cover	35.00	15.00	25.00	40.00	30.00	35.00
Litter	5.00	5.00	10.00	5.00	3.00	5.00
Bareground	55.00	75.00	60.00	50.00	65.00	55.00
Rock	5.00	5.00	5.00	5.00	2.00	5.00

**% COMPOSITION**

Shrubs	14.29	33.33	40.00	37.50	50.00	42.86
Forbs	28.57	53.33	60.00	12.50	0.00	0.00
Grasses	57.14	13.33	0.00	50.00	50.00	57.14

7.00	8.00	9.00	10.00	Mean	SDev	Freq
5.00	0.00	20.00	5.00	6.00	4.90	90.00
5.00	0.00	0.00	0.00	2.00	3.32	30.00
0.00	0.00	0.00	0.00	2.00	3.32	30.00
<hr/>						
0.00	0.00	0.00	0.00	1.00	2.00	20.00
0.00	0.00	0.00	0.00	0.80	2.40	10.00
20.00	0.00	0.00	0.00	4.00	6.63	30.00
<hr/>						
0.00	0.00	0.00	0.00	1.00	2.00	20.00
5.00	15.00	0.00	5.00	8.70	6.87	80.00
0.00	0.00	0.00	0.00	0.50	1.50	10.00
<hr/>						
35.00	15.00	20.00	10.00	26.00	9.95	
10.00	10.00	5.00	5.00	6.30	2.49	
50.00	70.00	70.00	80.00	63.00	10.05	
5.00	5.00	5.00	5.00	4.70	0.90	
<hr/>						
28.57	0.00	100.00	50.00	39.65	25.00	
57.14	0.00	0.00	0.00	21.15	24.91	
14.29	100.00	0.00	50.00	39.19	30.09	
<hr/>						

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Sediment Pond Banks

AREA: Cottonwood Mine New Waste Rock Area (1990 Interim)

DATE: Sept. 9-13, 1996

WORKERS: P. Collins, D. Collins

SLOPE: Variable

EXPOSURE: Variable

ANIMAL USE/DISTURBANCE:

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Artemisia tridentata*

*Atriplex canescens*

*Atriplex confertifolia*

*Ceratoides lanata*

*Gutierrezia sarothrae*

*Malcomia africana*

*Medicago sativa*

*Penstemon palmeri*

*Hilaria jamesii*

*Elymus spicatus*

*Agropyron cristatum*

*Elymus lanceolatus*

*Elymus cinereus*

*Stipa hymenoides*

*Sitanion hystrix*

*Sporobolus airoides*

NOTES: 1) This year less than 10% of the cover were weedy

spp. It has improved each year.

2) Site looked good, but it's been a dry summer and  
the plants show it.

**UP&L-COTTONWOOD MINE**

Sediment Pond Banks

New Waste Rock Site (1990)

Slope: variable

Exposure: variable

Sample Date: 9-13 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00

**SHRUBS**

<i>Atriplex confertifolia</i>	0.00	5.00	0.00	0.00	0.00	5.00
<i>Atriplex canescens</i>	5.00	15.00	15.00	30.00	30.00	10.00
<i>Artemisia tridentata</i>	0.00	0.00	0.00	0.00	0.00	0.00

**FORBS**

<i>Penstemon palmeri</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Malcomia africana</i>	5.00	0.00	0.00	0.00	0.00	0.00

**GRASSES**

<i>Hilaria jamesii</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus lanceolatus</i>	15.00	5.00	5.00	0.00	0.00	15.00
<i>Elymus cinereus</i>	0.00	0.00	0.00	0.00	5.00	0.00
<i>Sitanion hystrrix</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus spicatus</i>	0.00	0.00	0.00	20.00	5.00	5.00
<i>Agropyron cristatum</i>	0.00	0.00	5.00	0.00	0.00	5.00

**COVER**

Total Living Cover	25.00	25.00	25.00	50.00	40.00	40.00
Litter	10.00	5.00	10.00	10.00	25.00	10.00
Bareground	40.00	45.00	40.00	20.00	25.00	30.00
Rock	25.00	25.00	25.00	20.00	10.00	20.00

**% COMPOSITION**

Shrubs	20.00	80.00	60.00	60.00	75.00	37.50
Forbs	20.00	0.00	0.00	0.00	0.00	0.00
Grasses	60.00	20.00	40.00	40.00	25.00	62.50

7.00	8.00	9.00	10.00	Mean	SDev	Freq
0.00	5.00	5.00	0.00	2.00	2.45	40.00
5.00	5.00	5.00	5.00	12.50	9.55	100.00
0.00	5.00	0.00	0.00	0.50	1.50	10.00
0.00	0.00	0.00	5.00	0.50	1.50	10.00
0.00	5.00	0.00	0.00	1.00	2.00	20.00
0.00	5.00	0.00	0.00	0.50	1.50	10.00
20.00	5.00	10.00	15.00	9.00	6.63	80.00
5.00	0.00	0.00	0.00	1.00	2.00	20.00
5.00	0.00	0.00	0.00	0.50	1.50	10.00
0.00	0.00	0.00	5.00	3.50	5.94	40.00
0.00	0.00	0.00	0.00	1.00	2.00	20.00
35.00	30.00	20.00	30.00	32.00	8.72	
5.00	5.00	10.00	5.00	9.50	5.68	
35.00	45.00	45.00	15.00	34.00	10.44	
25.00	20.00	25.00	50.00	24.50	9.60	
14.29	50.00	50.00	16.67	46.35	22.44	
0.00	16.67	0.00	16.67	5.33	8.19	
85.71	33.33	50.00	66.67	48.32	19.45	

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Refuse Berm '91 (Final) - New Waste Rock Site

AREA: Cottonwood Mine

DATE: Sept. 9-13, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 28 deg.

EXPOSURE: Slight

ANIMAL USE/DISTURBANCE:

EROSION: slight

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see quantitative data)

*Atriplex confertifolia*

*Atriplex canescens*

*Ceratoides lanata*

*Halogeton glomeratus*

*Lepidium perforatum*

*Lepidium montanum*

*Malcomia africana*

*Medicago sativa*

*Elymus lanceolatus*

*Sitanion hystrix*

*Stipa hymenoides*

- NOTES: 1) Most of the litter on the data was erosion control mat.  
2) Sampled randomly on berm.  
3) There was a spotty, but good representation of grasses and shrubs (mostly winterfat), but few forbs.  
4) Sampled lowest level of area. The next row up was newer reveg.  
5) Erosion control mat was hardly visible this year.

**UP&L-COTTONWOOD MINE**

Refuse Berm 1991 (Final)

Waste Rock Site (1991)

Slope: 28 deg

Exposure: S

Sample Date: 9-13 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00

**SHRUBS**

Atriplex confertifolia	0.00	0.00	5.00	0.00	0.00	0.00
Ceratoides lanata	10.00	10.00	5.00	5.00	15.00	5.00
Atriplex canescens	10.00	0.00	0.00	0.00	0.00	0.00

**FORBS**

Malcomia africana	0.00	0.00	0.00	0.00	0.00	0.00
Halogeton glomeratus	0.00	0.00	0.00	0.00	0.00	10.00

**GRASSES**

Elymus spicatus	0.00	10.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	0.00	10.00	5.00	10.00	0.00	0.00

**COVER**

Total Living Cover	20.00	30.00	15.00	15.00	15.00	15.00
Litter	5.00	5.00	10.00	10.00	10.00	10.00
Bareground	65.00	55.00	65.00	65.00	60.00	60.00
Rock	10.00	10.00	10.00	10.00	15.00	15.00

**% COMPOSITION**

Shrubs	100.00	33.33	66.67	33.33	100.00	33.33
Forbs	0.00	0.00	0.00	0.00	0.00	66.67
Grasses	0.00	66.67	33.33	66.67	0.00	0.00

7.00	8.00	9.00	10.00	Mean	SDev	Freq
0.00	0.00	0.00	0.00	0.50	1.50	10.00
15.00	15.00	20.00	20.00	12.00	5.57	100.00
0.00	0.00	0.00	0.00	1.00	3.00	10.00
<hr/>						
0.00	0.00	5.00	5.00	1.00	2.00	20.00
0.00	0.00	0.00	0.00	1.00	3.00	10.00
<hr/>						
0.00	0.00	0.00	0.00	1.00	3.00	10.00
5.00	5.00	0.00	0.00	3.50	3.91	50.00
<hr/>						
20.00	20.00	25.00	25.00	20.00	5.00	
10.00	10.00	10.00	10.00	9.00	2.00	
55.00	60.00	60.00	55.00	60.00	3.87	
15.00	10.00	5.00	10.00	11.00	3.00	
<hr/>						
75.00	75.00	80.00	80.00	67.67	24.58	
0.00	0.00	20.00	20.00	10.67	20.26	
25.00	25.00	0.00	0.00	21.67	25.60	
<hr/>						

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Ninth East Road Breakout

AREA: Cottonwood Mine (1988 Reveg. Area)

DATE: Sept 1996

WORKERS: P. Collins, D. Collins

SLOPE: Variable

EXPOSURE: Variable

ANIMAL USE/DISTURBANCE:

EROSION: Negligible

COVER: (see quantitative data).

DOMINANT PLANT SPECIES OBSERVED:

*Chrysanthemus nauseosus*  
*Eriogonum corymbosum*

*Aster chilensis*  
*Medicago sativa*  
*Melilotus officinalis*

*Bromus inermis*  
*Bromus tectorum*  
*Elymus lanceolatus*  
*Elymus spicatus*  
*Stipa hymenoides*  
*Agropyron cristatum*  
*Poa pratensis*  
*Elymus trachycaulus*  
*Elymus hispidus*

- NOTES:
- 1) We sampled randomly up road (n=10)
  - 2) There were more desirable species beginning to become est. compared to previous years.

**UP&L-COTTONWOOD MINE**

Ninth East Breakout

1988 Reveg Area

Slope: variable

Exposure: variable

Sample Date: 4 Sept 96

1.00      2.00      3.00      4.00      5.00      6.00

**SHRUBS****FORBS**

<i>Melilotus officinalis</i>	5.00	5.00	5.00	0.00	10.00	5.00
<i>Medicago sativa</i>	0.00	0.00	0.00	0.00	0.00	5.00
<i>Aster chilensis</i>	0.00	10.00	5.00	10.00	10.00	10.00

**GRASSES**

<i>Agropyron cristatum</i>	35.00	0.00	20.00	15.00	15.00	20.00
<i>Bromus inermis</i>	0.00	15.00	0.00	0.00	0.00	5.00
<i>Elymus spicatus</i>	0.00	0.00	0.00	5.00	0.00	0.00
<i>Elymus lanceolatus</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Poa pratensis</i>	10.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus trachycaulus</i>	0.00	15.00	0.00	0.00	0.00	0.00
<i>Elymus hispidus</i>	0.00	0.00	5.00	5.00	5.00	0.00

**COVER**

Total Living Cover	50.00	45.00	35.00	35.00	40.00	45.00
Litter	10.00	25.00	25.00	25.00	25.00	20.00
Bareground	15.00	10.00	20.00	20.00	15.00	15.00
Rock	25.00	20.00	20.00	20.00	20.00	20.00

**% COMPOSITION**

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	10.00	33.33	28.57	28.57	50.00	44.44
Grasses	90.00	66.67	71.43	71.43	50.00	55.56

7.00	8.00	9.00	10.00	Mean	SDev	Freq
5.00	5.00	5.00	0.00	4.50	2.69	80.00
10.00	5.00	0.00	0.00	2.00	3.32	30.00
5.00	5.00	20.00	5.00	8.00	5.10	90.00
<hr/>						
20.00	0.00	0.00	0.00	12.50	11.46	60.00
5.00	0.00	0.00	0.00	2.50	4.61	30.00
0.00	5.00	10.00	0.00	2.00	3.32	30.00
0.00	0.00	0.00	30.00	3.00	9.00	10.00
0.00	0.00	0.00	0.00	1.00	3.00	10.00
0.00	0.00	0.00	0.00	1.50	4.50	10.00
0.00	0.00	0.00	0.00	1.50	2.29	30.00
<hr/>						
45.00	20.00	35.00	35.00	38.50	8.08	
25.00	20.00	20.00	10.00	20.50	5.68	
15.00	35.00	30.00	30.00	20.50	7.89	
15.00	25.00	15.00	25.00	20.50	3.50	
<hr/>						
0.00	0.00	0.00	0.00	0.00	0.00	
44.44	75.00	71.43	14.29	20.50	5.68	
55.56	25.00	28.57	85.71	20.50	7.89	

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Test Plots '88

AREA: Cottonwood Mine

DATE: Sept. 6-10, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 35 deg.

EXPOSURE: E (S)

ANIMAL USE/DISTURBANCE:

EROSION: Slight to moderate in some areas

COVER: Similar to what was reported in 1994-95, the upper plots (T1 - T4) seemed to have more weedy spp. in the upper 1/2 of the plot. This could be over-spill from road salt above it. The plots looked worse this year (more weeds and bare ground).

NOTES: 1) See reference drawing below.

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ROAD

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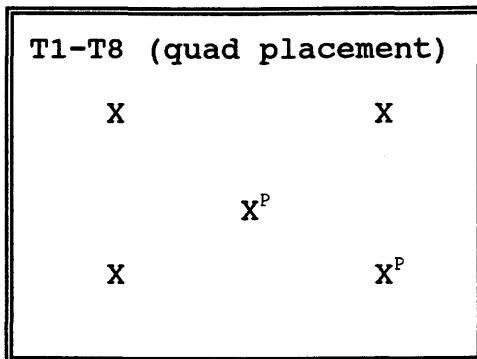
T1* Hydro Mulch	T2* Mulch Blanket	T3* Hay & Netting	T4* No Mulch
T5** Hydro Mulch	T6** Mulch Blanket	T7** Hay & Netting	T8** No Mulch

\* Non-irrigated plots

\*\* Irrigated plots

\*\*\* Plots are 20' x 20' with 5' between

Page 2  
Test Plots



<sup>P</sup> Production sample locations in previous years.

PLANT SPECIES PLANTED:

*Amalanchier alnifolia*  
*Atriplex canescens*  
*Chrysothamnus nauseosus*  
*Ephedra viridis*  
*Picea pungens*  
*Pseudotsuga menziesii*

*Aster glaucodes*  
*Linum lewisii*  
*Melilotus officinalis*  
*Sphaeralcea coccinea*

*Agropyron dasystachyum*  
*Agropyron intermedium*  
*Elymus smithii*  
*Elymus spicatus*  
*Oryzopsis hymenoides*  
*Stipa comata*

PLANT SPECIES OBSERVED:

*Chrysothamnus nauseosus*  
*Eriogonum corymbosum*  
*Atriplex confertifolia*

Page 3  
Test Plots

*Aster chilensis*  
*Aster glaucodes*  
*Chenopodium album*  
*Grindelia squarrosa*  
*Halogeton glomeratus*  
*Kochia scoparia*  
*Melilotus officinalis*  
*Eriogonum sp.*

*Elymus cinereus*  
*Elymus spicatus*  
*Elymus lanceolatus*

- METHODS:
- 1) For cover we sampled in the locations shown on the diagram to stay away from plot lines. Therefore, our sample size was ( $n=5/\text{subplot}$  and  $n=40/\text{plot}$ ).
  - 2) The subplots really should be restaked to separate them for sampling more easily.

UP&L-COTTONWOOD  
TEST PLOTS '88

Test Plot #1 (T1)

Slope: 35 deg

Exposure: E(S)

Sample Date: 6-10 Sept 96

	1.00	2.00	3.00	4.00	5.00	Mean
--	------	------	------	------	------	------

**SHRUBS**

<i>Chrysothamnus nauseosus</i>	5.00	5.00	5.00	10.00	0.00	5.00
<i>Eriogonum corymbosum</i>	0.00	10.00	0.00	0.00	0.00	2.00

**FORBS**

<i>Halogeton glomeratus</i>	15.00	0.00	0.00	0.00	0.00	3.00
<i>Aster chilensis</i>	0.00	0.00	20.00	50.00	25.00	19.00

**GRASSES**

<i>Elymus cinereus</i>	0.00	10.00	0.00	10.00	0.00	4.00
<i>Elymus lanceolatus</i>	0.00	25.00	0.00	0.00	0.00	5.00

**COVER**

Total Living Cover	20.00	50.00	25.00	70.00	25.00	38.00
Litter	5.00	10.00	10.00	5.00	5.00	7.00
Bareground	50.00	20.00	50.00	15.00	45.00	36.00
Rock	25.00	20.00	15.00	10.00	25.00	19.00

**% COMPOSITION**

Shrubs	25.00	30.00	20.00	14.29	0.00	17.86
Forbs	75.00	0.00	80.00	71.43	100.00	65.29
Grasses	0.00	70.00	0.00	14.29	0.00	16.86

UP&L-COTTONWOOD  
TEST PLOTS '88  
Test Plot #1 (T1)  
Slope: 35 deg  
Exposure: E(S)  
Sample Date: 6-10 Sept 96

SDev	Freq	
		SHRUBS
3.16	80.00	<i>Chrysothamnus nauseosus</i>
4.00	40.00	<i>Eriogonum corymbosum</i>

		FORBS
6.00	20.00	<i>Halogeton glomeratus</i>
18.55	60.00	<i>Aster chilensis</i>

		GRASSES
4.90	40.00	<i>Elymus cinereus</i>
10.00	20.00	<i>Elymus lanceolatus</i>

		COVER
19.13		Total Living Cover
2.45		Litter
15.30		Bareground
5.83		Rock

		% COMPOSITION
10.34		Shrubs
34.11		Forbs
27.14		Grasses

## UP&amp;L-COTTONWOOD

TEST PLOTS '88

Test Plot #2 (T2)

Slope: 35 deg

Exposure: E(S)

Sample Date: 6-10 Sept 96

1.00 2.00 3.00 4.00 5.00 Mean

**SHRUBS**

Eriogonum corymbosum	10.00	0.00	10.00	0.00	5.00	5.00
Chrysothamnus nauseosus	0.00	0.00	5.00	5.00	0.00	2.00

**FORBS**

Halogeton glomeratus	10.00	10.00	0.00	25.00	0.00	9.00
Kochia scoparia	0.00	5.00	0.00	0.00	0.00	1.00
Aster chilensis	20.00	0.00	15.00	0.00	35.00	14.00

**GRASSES**

Elymus lanceolatus	0.00	0.00	5.00	0.00	0.00	1.00
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**COVER**

Total Living Cover	40.00	15.00	35.00	30.00	40.00	32.00
Litter	5.00	5.00	10.00	10.00	5.00	7.00
Bareground	45.00	60.00	30.00	45.00	45.00	45.00
Rock	10.00	20.00	25.00	15.00	10.00	16.00

**% COMPOSITION**

Shrubs	25.00	0.00	42.86	16.67	12.50	19.40
Forbs	75.00	100.00	42.86	83.33	87.50	77.74
Grasses	0.00	0.00	14.29	0.00	0.00	2.86

UP&L-COTTONWOOD,  
TEST PLOTS '88  
Test Plot #2 (T2)  
Slope: 35 deg  
Exposure: E(S)  
Sample Date: 6-10 Sept 96

SDev	Freq	
		<b>SHRUBS</b>
4.47	60.00	<i>Eriogonum corymbosum</i>
2.45	40.00	<i>Chrysothamnus nauseosus</i>

		<b>FORBS</b>
9.17	60.00	<i>Halogeton glomeratus</i>
2.00	20.00	<i>Kochia scoparia</i>
13.19	60.00	<i>Aster chilensis</i>

		<b>GRASSES</b>
2.00	20.00	<i>Elymus lanceolatus</i>

	<b>COVER</b>
9.27	Total Living Cover
2.45	Litter
9.49	Bareground
5.83	Rock

	<b>% COMPOSITION</b>
14.23	Shrubs
19.22	Forbs
5.71	Grasses

## UP&amp;L-COTTONWOOD

TEST PLOTS '88

Test Plot #3 (T3)

Slope: 35 deg

Exposure: E(S)

Sample Date: 6-10 Sept 96

1.00 2.00 3.00 4.00 5.00 Mean

**SHRUBS**

<i>Chrysothamnus nauseosus</i>	0.00	0.00	0.00	0.00	15.00	3.00
<i>Atriplex confertifolia</i>	0.00	0.00	0.00	15.00	0.00	3.00

**FORBS**

<i>Halogeton glomeratus</i>	5.00	0.00	5.00	0.00	0.00	2.00
<i>Aster chilensis</i>	0.00	0.00	0.00	0.00	5.00	1.00
<i>Kochia scoparia</i>	30.00	35.00	25.00	25.00	30.00	29.00

**GRASSES****COVER**

Total Living Cover	35.00	35.00	30.00	40.00	50.00	38.00
Litter	10.00	10.00	10.00	10.00	10.00	10.00
Bareground	35.00	30.00	35.00	40.00	15.00	31.00
Rock	20.00	25.00	25.00	10.00	25.00	21.00

**% COMPOSITION**

Shrubs	0.00	0.00	0.00	37.50	30.00	13.50
Forbs	100.00	100.00	100.00	62.50	70.00	86.50
Grasses	0.00	0.00	0.00	0.00	0.00	0.00

UP&L-COTTONWOOD  
TEST PLOTS '88  
Test Plot #3 (T3)  
Slope: 35 deg  
Exposure: E(S)  
Sample Date: 6-10 Sept 96

SDev	Freq	
		SHRUBS
6.00	20.00	<i>Chrysothamnus nauseosus</i>
6.00	20.00	<i>Atriplex confertifolia</i>

		FORBS
2.45	40.00	<i>Halogeton glomeratus</i>
2.00	20.00	<i>Aster chilensis</i>
3.74	100.00	<i>Kochia scoparia</i>

GRASSES

	COVER
6.78	Total Living Cover
0.00	Litter
8.60	Bareground
5.83	Rock

	% COMPOSITION
16.70	Shrubs
16.70	Forbs
0.00	Grasses

**UP&L-COTTONWOOD****TEST PLOTS'88****Test Plot #4 (T4)**

Slope: 35 deg

Exposure: E(S)

Sample Date: 6-10 Sept 96

1.00 2.00 3.00 4.00 5.00 Mean

**SHRUBS**

Eriogonum corymbosum	0.00	25.00	0.00	0.00	0.00	5.00
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**FORBS**

Halogeton glomeratus	25.00	0.00	15.00	30.00	10.00	16.00
Aster chilensis	0.00	15.00	0.00	0.00	10.00	5.00
Kochia scoparia	10.00	0.00	10.00	0.00	10.00	6.00

**GRASSES****COVER**

Total Living Cover	35.00	40.00	25.00	30.00	30.00	32.00
Litter	10.00	10.00	10.00	10.00	10.00	10.00
Bareground	30.00	25.00	40.00	40.00	30.00	33.00
Rock	25.00	25.00	25.00	20.00	30.00	25.00

**% COMPOSITION**

Shrubs	0.00	62.50	0.00	0.00	0.00	12.50
Forbs	100.00	37.50	100.00	100.00	100.00	87.50
Grasses	0.00	0.00	0.00	0.00	0.00	0.00

UP&L-COTTONWOOD  
TEST PLOTS'88  
Test Plot #4 (T4)  
Slope: 35 deg  
Exposure: E(S)  
Sample Date: 6-10 Sept 96

SDev	Freq	
10.00	20.00	SHRUBS <i>Eriogonum corymbosum</i>

10.68	80.00	FORBS <i>Halogenon glomeratus</i>
6.32	40.00	<i>Aster chilensis</i>
4.90	60.00	<i>Kochia scoparia</i>

#### GRASSES

5.10	COVER Total Living Cover
0.00	Litter
6.00	Bareground
3.16	Rock

25.00	% COMPOSITION Shrubs
25.00	Forbs
0.00	Grasses

## UP&amp;L-COTTONWOOD

TEST PLOTS '88

Test Plot #5 (T5)

Slope: 35 deg

Exposure: E(S)

Sample Date: 6-10 Sept 96

1.00 2.00 3.00 4.00 5.00 Mean

**SHRUBS**

Eriogonum corymbosum	15.00	15.00	15.00	5.00	25.00	15.00
Chrysothamnus nauseosus	0.00	15.00	10.00	20.00	10.00	11.00

**FORBS**

Aster chilensis	40.00	10.00	30.00	35.00	20.00	27.00
Grindelia squarrosa	0.00	5.00	0.00	0.00	0.00	1.00

**GRASSES**

Elymus spicatus	0.00	10.00	0.00	0.00	0.00	2.00
Agropyron cristatum	0.00	0.00	5.00	0.00	0.00	1.00

**COVER**

Total Living Cover	55.00	55.00	60.00	60.00	55.00	57.00
Litter	10.00	10.00	5.00	10.00	10.00	9.00
Bareground	25.00	10.00	25.00	5.00	15.00	16.00
Rock	10.00	25.00	10.00	25.00	20.00	18.00

**% COMPOSITION**

Shrubs	27.27	54.55	41.67	41.67	63.64	45.76
Forbs	72.73	27.27	50.00	58.33	36.36	48.94
Grasses	0.00	18.18	8.33	0.00	0.00	5.30

UP&L-COTTONWOOD:  
TEST PLOTS '88  
Test Plot #5 (T5)  
Slope: 35 deg  
Exposure: E(S)  
Sample Date: 6-10 Sept 96

SDev Freq

SHRUBS

6.32	100.00	<i>Eriogonum corymbosum</i>
6.63	80.00	<i>Chrysothamnus nauseosus</i>

FORBS

10.77	100.00	<i>Aster chilensis</i>
2.00	20.00	<i>Grindelia squarrosa</i>

GRASSES

4.00	20.00	<i>Elymus spicatus</i>
2.00	20.00	<i>Agropyron cristatum</i>

COVER

2.45	Total Living Cover
2.00	Litter
8.00	Bareground
6.78	Rock

% COMPOSITION

12.43	Shrubs
16.02	Forbs
7.20	Grasses

## UP&amp;L-COTTONWOOD.

TEST PLOTS '88

Test Plot #6 (T6)

Slope: 35 deg

Exposure: E(S)

Sample Date: 6-10 Sept 96

1.00 2.00 3.00 4.00 5.00 Mean

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SHRUBS

<i>Chrysothamnus nauseosus</i>	5.00	20.00	0.00	0.00	5.00	6.00
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## FORBS

<i>Aster chilensis</i>	55.00	15.00	80.00	50.00	15.00	43.00
<i>Melilotus officinalis</i>	0.00	0.00	0.00	0.00	5.00	1.00

---

## GRASSES

<i>Elymus spicatus</i>	5.00	0.00	0.00	15.00	10.00	6.00
<i>Elymus lanceolatus</i>	0.00	15.00	0.00	0.00	10.00	5.00

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## COVER

Total Living Cover	65.00	50.00	80.00	65.00	45.00	61.00
Litter	5.00	15.00	5.00	10.00	20.00	11.00
Bareground	20.00	15.00	5.00	10.00	15.00	13.00
Rock	10.00	20.00	10.00	15.00	20.00	15.00

---

## % COMPOSITION

Shrubs	7.69	40.00	0.00	0.00	11.11	11.76
Forbs	84.62	30.00	100.00	76.92	44.44	67.20
Grasses	7.69	30.00	0.00	23.08	44.44	21.04

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UP&L-COTTONWOOD.  
TEST PLOTS '88  
Test Plot #6 (T6)  
Slope: 35 deg  
Exposure: E(S)  
Sample Date: 6-10 Sept 96

SDev	Freq	
7.35	60.00	SHRUBS <i>Chrysothamnus nauseosus</i>

25.02	100.00	FORBS
2.00	20.00	<i>Aster chilensis</i>
		<i>Melilotus officinalis</i>

5.83	60.00	GRASSES
6.32	40.00	<i>Elymus spicatus</i>
		<i>Elymus lanceolatus</i>

12.41	COVER
5.83	Total Living Cover
5.10	Litter
4.47	Bareground
	Rock

14.77	% COMPOSITION
25.98	Shrubs
15.83	Forbs
	Grasses

## UP&amp;L-COTTONWOOD.

TEST PLOTS '88

Test Plot #7 (T7)

Slope: 35 deg

Exposure: E(S)

Sample Date: 6-10 Sept 96

1.00 2.00 3.00 4.00 5.00 Mean

**SHRUBS**

<i>Chrysothamnus nauseosus</i>	10.00	15.00	0.00	0.00	5.00	6.00
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**FORBS**

<i>Aster chilensis</i>	5.00	5.00	70.00	10.00	30.00	24.00
<i>Grindelia squarrosa</i>	0.00	5.00	0.00	0.00	5.00	2.00
<i>Machaeranthera canescens</i>	0.00	0.00	0.00	5.00	0.00	1.00

**GRASSES**

<i>Elymus spicatus</i>	30.00	30.00	0.00	0.00	10.00	14.00
<i>Elymus lanceolatus</i>	0.00	0.00	0.00	20.00	0.00	4.00

**COVER**

Total Living Cover	45.00	55.00	70.00	35.00	50.00	51.00
Litter	20.00	10.00	15.00	15.00	10.00	14.00
Bareground	20.00	20.00	5.00	20.00	20.00	17.00
Rock	15.00	15.00	10.00	30.00	20.00	18.00

**% COMPOSITION**

Shrubs	22.22	27.27	0.00	0.00	10.00	11.90
Forbs	11.11	18.18	100.00	42.86	70.00	48.43
Grasses	66.67	54.55	0.00	57.14	20.00	39.67

UP&L-COTTONWOOD  
TEST PLOTS '88  
Test Plot #7 (T7)  
Slope: 35 deg.  
Exposure: E(S)  
Sample Date: 6-10 Sept 96

SDev	Freq	
5.83	60.00	SHRUBS <i>Chrysothamnus nauseosus</i>

24.78	100.00	FORBS <i>Aster chilensis</i>
2.45	40.00	<i>Grindelia squarrosa</i>
2.00	20.00	<i>Machaeranthera canescens</i>

13.56	60.00	GRASSES <i>Elymus spicatus</i>
8.00	20.00	<i>Elymus lanceolatus</i>

	COVER
11.58	Total Living Cover
3.74	Litter
6.00	Bareground
6.78	Rock

	% COMPOSITION
11.22	Shrubs
33.06	Forbs
25.36	Grasses

## UP&amp;L-COTTONWOOD.

TEST PLOTS '88

Test Plot #8 (T8)

Slope: 35 deg

Exposure: E(S)

Sample Date: 6-10 Sept 96

1.00 2.00 3.00 4.00 5.00 Mean

**SHRUBS**

Cercocarpus ledifolius	0.00	0.00	0.00	0.00	5.00	1.00
Chrysothamnus nauseosus	0.00	5.00	0.00	0.00	5.00	2.00
Eriogonum corymbosum	0.00	0.00	0.00	0.00	10.00	2.00

**FORBS**

Aster chilensis	45.00	60.00	85.00	20.00	15.00	45.00
Halogeton glomeratus	0.00	0.00	0.00	5.00	0.00	1.00

**GRASSES**

Agropyron cristatum	5.00	5.00	0.00	0.00	5.00	3.00
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**COVER**

Total Living Cover	50.00	70.00	85.00	25.00	40.00	54.00
Litter	5.00	10.00	5.00	10.00	10.00	8.00
Bareground	15.00	5.00	5.00	20.00	25.00	14.00
Rock	30.00	15.00	5.00	45.00	25.00	24.00

**% COMPOSITION**

Shrubs	0.00	7.14	0.00	0.00	50.00	11.43
Forbs	90.00	85.71	100.00	100.00	37.50	82.64
Grasses	10.00	7.14	0.00	0.00	12.50	5.93

UP&L-COTTONWOOD  
TEST PLOTS '88  
Test Plot #8 (T8)  
Slope: 35 deg  
Exposure: E(S)  
Sample Date: 6-10 Sept 96

SDev	Freq	
		<b>SHRUBS</b>
2.00	20.00	<i>Cercocarpus ledifolius</i>
2.45	40.00	<i>Chrysothamnus nauseosus</i>
4.00	20.00	<i>Eriogonum corymbosum</i>

		<b>FORBS</b>
25.88	100.00	<i>Aster chilensis</i>
2.00	20.00	<i>Halogeton glomeratus</i>

		<b>GRASSES</b>
2.45	60.00	<i>Agropyron cristatum</i>

	<b>COVER</b>
21.31	Total Living Cover
2.45	Litter
8.00	Bareground
13.56	Rock

	<b>% COMPOSITION</b>
19.48	Shrubs
23.26	Forbs
5.13	Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Refuse Berm (seeded 1996)

AREA: Cottonwood Mine New Waste Rock Area (1990 Interim)

DATE: Sept. 9-13, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 28 deg.

EXPOSURE: S & E

ANIMAL USE/DISTURBANCE: No obvious disturbance

EROSION: Negligible

COVER: Approx. 20%

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex canescens*

*Halogeton glomeratus*

*Salsola pestifer*

- NOTES:
- 1) Qualitative data only.
  - 2) Dominated by weeds, but the erosion control mat may be hiding the desirable species.
  - 3) The mat was placed and holding well.

*PHOTOGRAPHS*



Cottonwood Mine - Old Fan Road (1 of 3)



Cottonwood Mine - Old Fan Road (2 of 3)



Cottonwood Mine - Old Fan Road (3 of 3)



Cottonwood Mine - 4th East Road



Cottonwood Mine - Storage Yard Slope



Cottonwood Mine - Parking Lot Slope



Cottonwood Mine - Road/Silo Pad Slope



Cottonwood Mine - Tipple Area Slopes



Cottonwood Mine - Sediment Pond Banks



Cottonwood Mine - Old Waste Rock - Cell #1



Cottonwood Mine - Old Waste Rock - Cell #2



Cottonwood Mine - Old Waste Rock - Cell #3



Cottonwood Mine - Old Waste Rock - Cell #4



Cottonwood Mine - Old Waste Rock - Cell #5



Cottonwood Mine - Old Waste Rock - Cell #6



Cottonwood Mine - Old Waste Rock - Cell #7



Cottonwood Mine - Old Waste Rock - Berm #1 (1 of 2)



Cottonwood Mine - Old Waste Rock - Berm #1 (2 of 2)



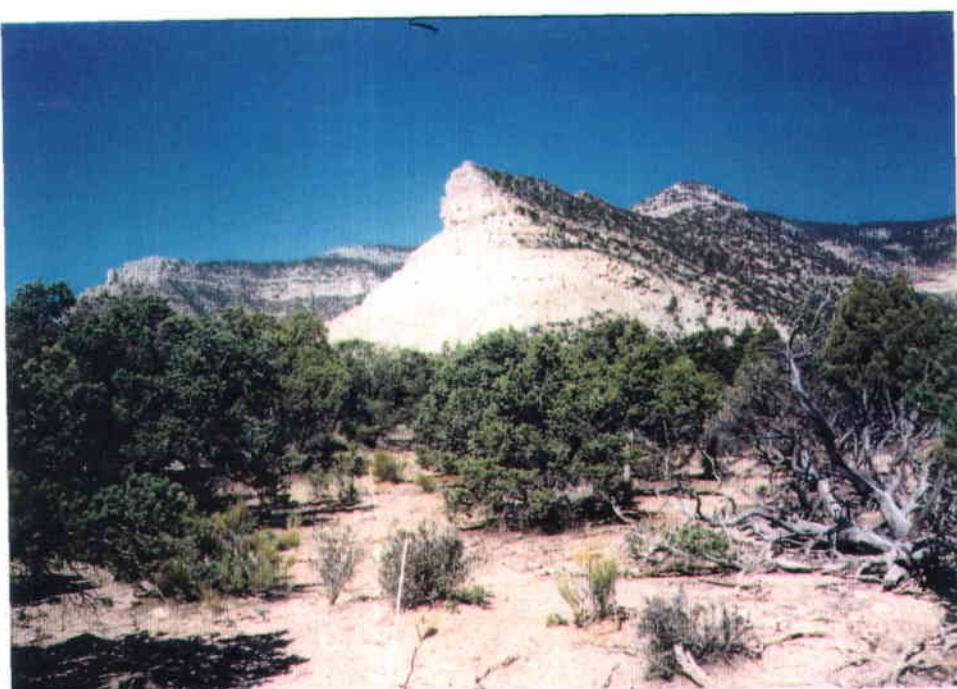
Cottonwood Mine - Old Waste Rock - Berm #2



Cottonwood Mine - Old Waste Rock - Berm #3



Cottonwood Mine - Old Waste Rock - Berm #4



Cottonwood Mine - CTW Reference Area



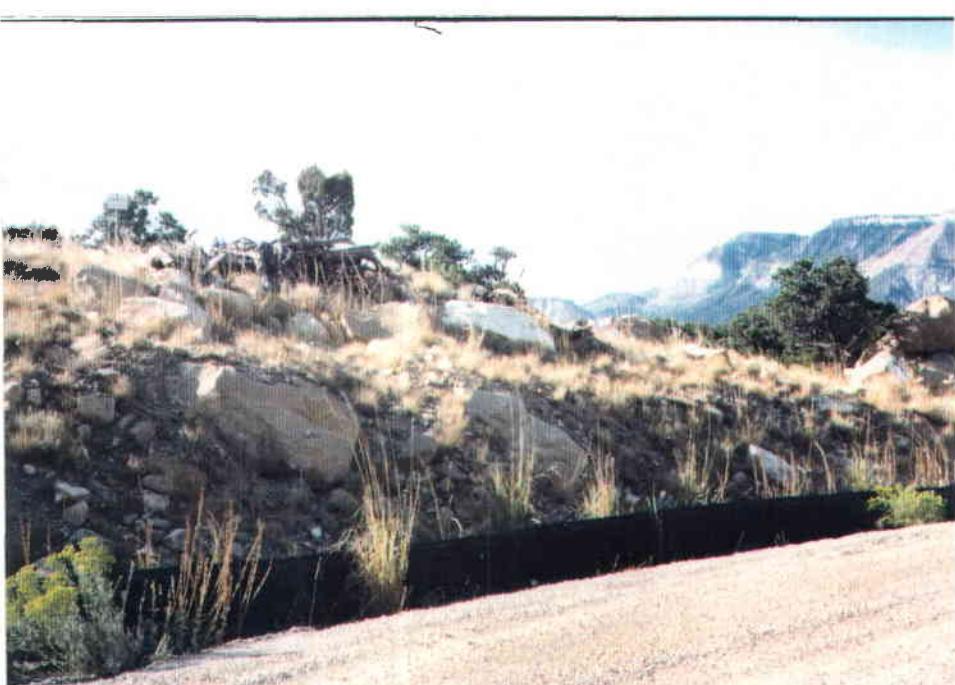
Cottonwood Mine - New Waste Rock - Road Slopes (1 of 4)



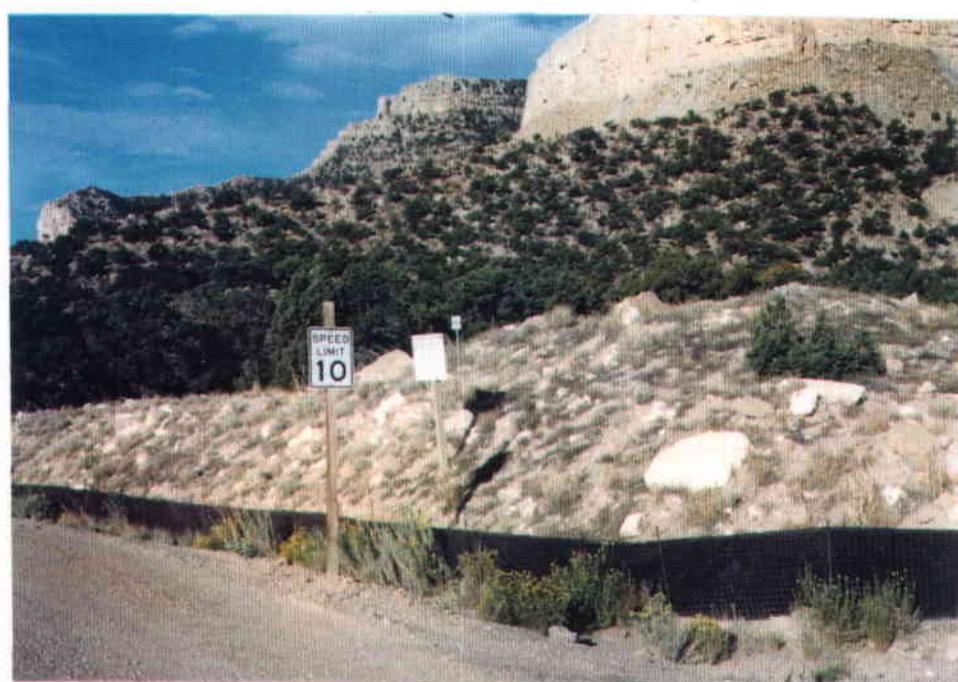
Cottonwood Mine - New Waste Rock - Road Slopes (2 of 4)



Cottonwood Mine - New Waste Rock - Road Slopes (3 of 4)



Cottonwood Mine - New Waste Rock - Road Slopes (4 of 4)



Cottonwood Mine - New Waste Rock - Topsoil Stockpile  
(1 of 2)



Cottonwood Mine - New Waste Rock - Topsoil Stockpiles  
(2 of 2)



Cottonwood Mine - New Waste Rock - Subsoil Stockpile  
(1 of 2)



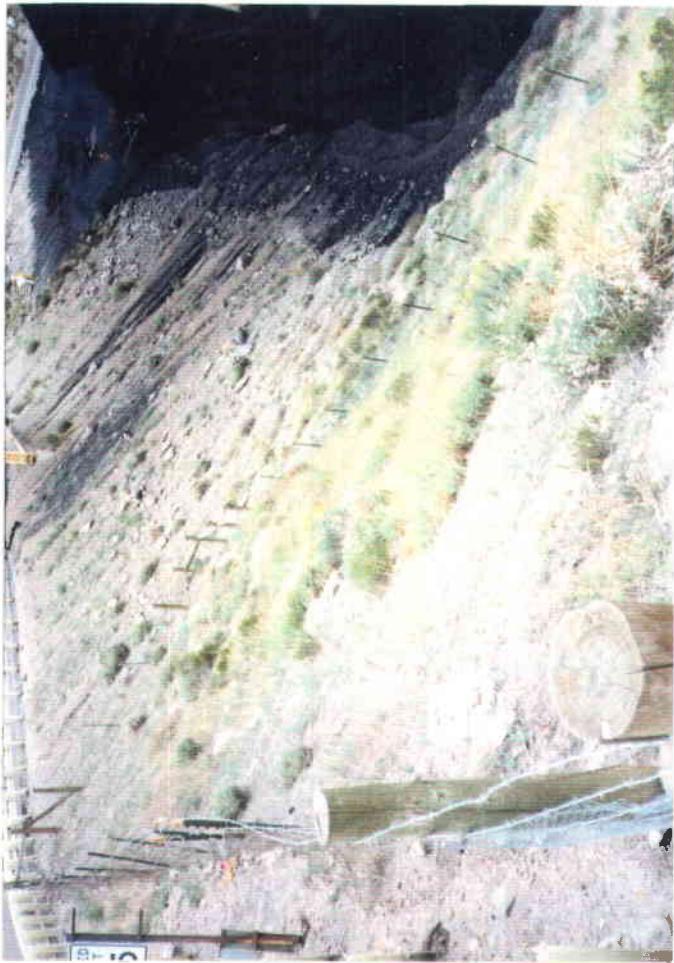
Cottonwood Mine - New Waste Rock - Subsoil Stockpiles  
(2 of 2)



Cottonwood Mine - New Waste Rock - Sediment Pond Banks



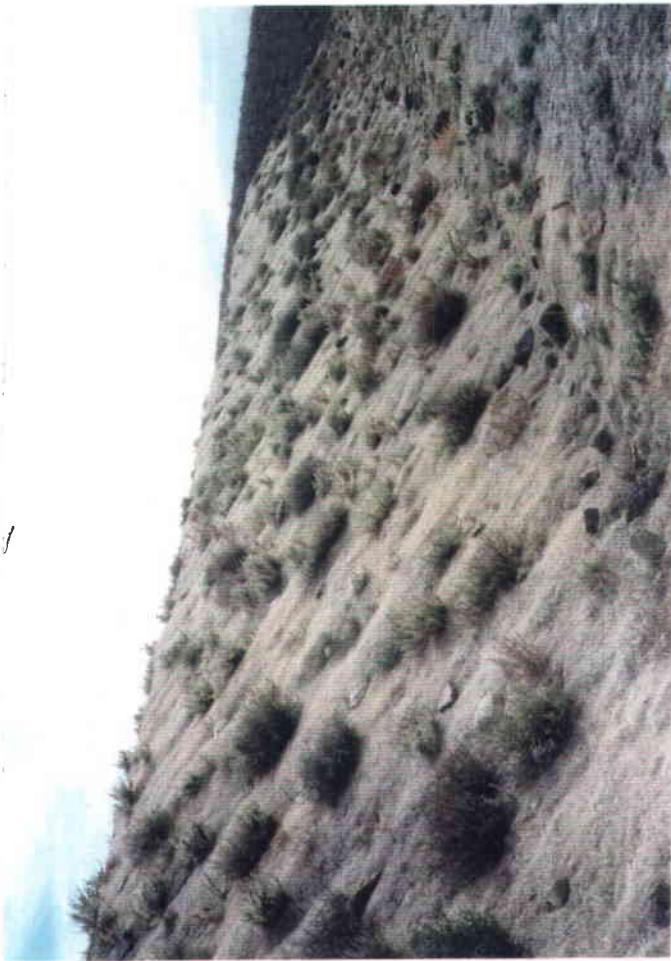
Cottonwood Mine - New Waste Rock - Refuse Berm 1991



Cottonwood Mine - Test Plots '88



Cottonwood Mine - Ninth East Road Breakout



Cottonwood Mine - Refuse Berm '96

**PACIFICORP  
VEGETATION MONITORING  
1996**

**VOLUME II**

**REPORTS FOR THE  
COTTONWOOD MINE, DES-BEE-DOVE,  
DEER CREEK, & COTTONWOOD CANYON AREAS**



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**DES-BEE-DOVE AREA**

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Beehive Yard Slope

AREA: Des-Bee-Dove (1988 Reveg. Area)

DATE: Sept. 9-14, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 20-50 deg.

EXPOSURE: SE

AREA: 1.6 acres

ANIMAL USE/DISTURBANCE:

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

*Atriplex confertifolia*

*Ceratoides lanata*

*Chrysothamnus nauseosus*

*Atriplex confertifolia*

*Halogeton glomeratus*

*Penstemon palmeri*

*Agropyron cristatum*

*Elymus lanceolatus*

*Elymus salinus*

*Elymus smithii*

*Elymus spicatus*

*Elymus cinereus*

*Stipa hymenoides*

NOTES: 1) This area seems to look better than it ever has.  
Good species diversity.

2) Methods: As in 1993 - 1995, because the slope was so steep, we estimated the quadrats from a distances (n=10).

3) Good density of woody species presently established.  
4) The chain link fence covering the ground is still holding earth well.

## UP&amp;L-DES BEE DOVE

Beehive Yard Slope

1988 Reveg Area

Acreage: 1.6

Slope: 20 - 50 deg

Exposure: SE

Sample Date: 9-14 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

## SHRUBS

<i>Chrysothamnus nauseosus</i>	0.00	0.00	5.00	10.00	10.00	10.00	35.00	30.00
<i>Atriplex confertifolia</i>	30.00	30.00	15.00	10.00	10.00	10.00	0.00	0.00

## FORBS

<i>Penstemon palmeri</i>	0.00	0.00	30.00	5.00	0.00	10.00	0.00	5.00
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## GRASSES

<i>Elymus lanceolatus</i>	0.00	10.00	0.00	15.00	0.00	10.00	0.00	5.00
<i>Elymus cinereus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus spicatus</i>	0.00	0.00	0.00	0.00	15.00	0.00	0.00	5.00
<i>Agropyron cristatum</i>	0.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00
<i>Elymus salinus</i>	5.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
<i>Stipa hymenoides</i>	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00

## COVER

Total Living Cover	35.00	40.00	50.00	40.00	45.00	50.00	50.00	45.00
Litter	10.00	10.00	15.00	10.00	10.00	10.00	10.00	10.00
Bareground	30.00	35.00	10.00	15.00	15.00	5.00	5.00	5.00
Rock	25.00	15.00	25.00	35.00	30.00	35.00	35.00	40.00

## % COMPOSITION

Shrubs	85.71	75.00	40.00	50.00	44.44	40.00	70.00	66.67
Forbs	0.00	0.00	60.00	12.50	0.00	20.00	0.00	11.11
Grasses	14.29	25.00	0.00	37.50	55.56	40.00	30.00	22.22

UP&L-DES BEE DOVE  
 Beehive Yard Slope  
 1988 Reveg Area  
 Acreage: 1.6  
 Slope: 20 - 50 deg  
 Exposure: SE

Sample Date: 9-14 Sept 96

9.00	10.00	Mean	SDev	Freq
------	-------	------	------	------

20.00	10.00	13.00	11.22	80.00
0.00	0.00	10.50	11.06	60.00

#### SHRUBS

*Chrysothamnus nauseosus*  
*Atriplex confertifolia*

10.00	0.00	6.00	8.89	50.00
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#### FORBS

*Penstemon palmeri*

0.00	0.00	4.00	5.39	40.00
15.00	0.00	1.50	4.50	10.00
0.00	0.00	2.00	4.58	20.00
0.00	20.00	3.50	7.09	20.00
0.00	0.00	1.50	3.20	20.00
0.00	0.00	1.00	3.00	10.00

#### GRASSES

*Elymus lanceolatus*  
*Elymus cinereus*  
*Elymus spicatus*  
*Agropyron cristatum*  
*Elymus salinus*  
*Stipa hymenoides*

45.00	30.00	43.00	6.40
5.00	5.00	9.50	2.69
5.00	5.00	13.00	10.54
45.00	60.00	34.50	11.72

#### COVER

Total Living Cover  
 Litter  
 Bareground  
 Rock

44.44	33.33	54.96	16.95
22.22	0.00	12.58	17.86
33.33	66.67	32.46	18.27

#### % COMPOSITION

Shrubs  
 Forbs  
 Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Beehive Road Berm

AREA: Des-Bee-Dove (1988 Reveg. Area)

DATE: Sept. 9-14, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 30 deg

AREA SIZE: .1 acre

EXPOSURE: Variable

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see quantitative data)

*Atriplex confertifolia*

*Chrysanthemus nauseosus*

*Eriogonum corymbosum*

*Ephedra viridis*

*Halogeton glomeratus*

*Penstemon palmeri*

*Elymus cinereus*

*Elymus lanceolatus*

*Stipa hymenoides*

*Elymus spicatus*

NOTES: 1) For quant. data, we sampled at regular intervals along berm (n=10).

2) There was a better representation of desirable species this year. There were still some weedy species though.

3) The slope below the substation had little organic cover, but it was holding well with little erosion.

**UP&L-DES BEE DOVE**

Beehive Road Berm

1988 Reveg Area

Acreage: .1

Slope: 30 deg

Exposure: variable

Sample Date: 9-14 Sept 96

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
--	------	------	------	------	------	------	------	------

**SHRUBS**

Atriplex confertifolia	10.00	5.00	0.00	0.00	20.00	0.00	0.00	0.00
Chrysothamnus nauseosus	10.00	15.00	0.00	0.00	5.00	0.00	25.00	0.00
Eriogonum corymbosum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
Ephedra viridis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00

**FORBS**

Halogeton glomeratus	0.00	0.00	0.00	0.00	5.00	10.00	0.00	0.00
Penstemon palmeri	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00

**GRASSES**

Stipa hymenoides	5.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
Elymus spicatus	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00

**COVER**

Total Living Cover	25.00	20.00	10.00	10.00	30.00	10.00	25.00	20.00
Litter	10.00	5.00	5.00	10.00	10.00	5.00	5.00	5.00
Bareground	20.00	55.00	60.00	10.00	30.00	20.00	5.00	5.00
Rock	45.00	20.00	25.00	70.00	30.00	65.00	65.00	70.00

**% COMPOSITION**

Shrubs	80.00	100.00	0.00	0.00	83.33	0.00	100.00	50.00
Forbs	0.00	0.00	0.00	0.00	16.67	100.00	0.00	25.00
Grasses	20.00	0.00	100.00	100.00	0.00	0.00	0.00	25.00

UP&L-DES BEE DOVE  
 Beehive Road Berm  
 1988 Reveg Area  
 Acreage: .1  
 Slope: 30 deg  
 Exposure: variable  
 Sample Date: 9-14 Sept 96

Mean	SDev	Freq	
SHRUBS			
4.38	6.82	37.50	<i>Atriplex confertifolia</i>
6.88	8.64	50.00	<i>Chrysothamnus nauseosus</i>
0.63	1.65	12.50	<i>Eriogonum corymbosum</i>
0.63	1.65	12.50	<i>Ephedra viridis</i>
FORBS			
1.88	3.48	20.00	<i>Halogeton glomeratus</i>
0.63	1.65	10.00	<i>Penstemon palmeri</i>
GRASSES			
1.25	2.17	25.00	<i>Stipa hymenoides</i>
1.25	3.31	12.50	<i>Elymus spicatus</i>
1.25	3.31	12.50	<i>Elymus lanceolatus</i>
COVER			
18.75	7.40		Total Living Cover
6.88	2.42		Litter
25.63	20.07		Bareground
48.75	19.96		Rock
% COMPOSITION			
51.67	42.56		Shrubs
17.71	32.39		Forbs
30.63	41.11		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Deseret Road Berm

AREA: Des-Bee-Dove (1988 Reveg. Area)

DATE: Sept. 9-14, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 6-10 deg.

EXPOSURE: E

AREA: .2 acre

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Slight

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex confertifolia*

*Chrysothamnus nauseosus*

*Bassia hyssopifolia*

*Halogeton glomeratus*

*Kochia scoparia*

*Elymus cinereus*

*Elymus lanceolatus*

*Sitanion hystrix*

*Stipa hymenoides*

- NOTES:
- 1) Much of the vegetation was disturbed due to roadside maintenance.
  - 2) The site seemed to still be weedy, but there was not much change from last year.
  - 3) Methods: For cover (n=10) we placed meter sq. quadrats at regular intervals along inside, top and outside of berm (nearest road).
  - 4) As previous two years', most of the herbaceous spp. were weedy exotic species.

## UP&amp;L-DES BEE DOVE

Desert Road Berm

1988 Reveg Area

Acreage: .2

Slope: 6-10 deg

Exposure: E

Sample Date: 9-14 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

## SHRUBS

Atriplex confertifolia	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00
Chrysothamnus nauseosus	0.00	0.00	0.00	20.00	0.00	10.00	0.00	0.00

## FORBS

Halogetum glomeratus	15.00	35.00	5.00	0.00	25.00	5.00	25.00	30.00
Kochia scoparia	10.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00

## GRASSES

Elymus salinus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus spicatus	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
Sitanion hystrix	0.00	0.00	0.00	0.00	0.00	5.00	0.00	5.00
Elymus lanceolatus	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00

## COVER

Total Living Cover	25.00	35.00	30.00	35.00	25.00	25.00	25.00	35.00
Litter	5.00	5.00	5.00	10.00	5.00	5.00	5.00	5.00
Bareground	40.00	25.00	40.00	15.00	25.00	10.00	50.00	30.00
Rock	30.00	35.00	25.00	40.00	45.00	60.00	20.00	30.00

## % COMPOSITION

Shrubs	0.00	0.00	83.33	57.14	0.00	40.00	0.00	0.00
Forbs	100.00	100.00	16.67	0.00	100.00	40.00	100.00	85.71
Grasses	0.00	0.00	0.00	42.86	0.00	20.00	0.00	14.29

## UP&amp;L-DES BEE DOVE

Desert Road Berm

1988 Reveg Area

Acreage: .2

Slope: 6-10 deg

Exposure: E

Sample Date: 9-14 Sept 96

9.00 10.00 Mean SDev Freq

0.00 10.00 3.50 7.76 20.00  
15.00 5.00 5.00 7.07 40.00

## SHRUBS

*Atriplex confertifolia*  
*Chrysothamnus nauseosus*5.00 5.00 15.00 12.04 90.00  
0.00 0.00 1.50 3.20 20.00

## FORBS

*Halogetum glomeratus*  
*Kochia scoparia*5.00 0.00 0.50 1.50 10.00  
0.00 0.00 0.50 1.50 10.00  
0.00 0.00 1.00 2.00 20.00  
0.00 0.00 1.00 3.00 10.00

## GRASSES

*Elymus salinus*  
*Elymus spicatus*  
*Sitanion hystrix*  
*Elymus lanceolatus*25.00 20.00 28.00 5.10  
5.00 10.00 6.00 2.00  
40.00 10.00 28.50 13.24  
30.00 60.00 37.50 13.09

## COVER

Total Living Cover  
Litter  
Bareground  
Rock60.00 75.00 31.55 33.29  
20.00 25.00 58.74 39.68  
20.00 0.00 9.71 13.77

## % COMPOSITION

Shrubs  
Forbs  
Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Portal Road Berm

AREA: Des-Bee-Dove (1988 Reveg. Area)

DATE: Sept. 9-14, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 30 deg.

EXPOSURE: SW

AREA: .1 acre

ANIMAL USE/DISTURBANCE: Slight

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex confertifolia*

*Chrysothamnus nauseosus*

*Eriogonum corymbosum*

*Bassia hyssopifolia*

*Halogeton glomeratus*

*Agropyron cristatum*

*Elymus salinus*

*Elymus spicatus*

*Stipa hymenoides*

- NOTES: 1) Methods: For cover we placed meter sq. quadrats at regular intervals (n=7).  
2) We took samples on inside, top, then on the outside of the berm.  
3) As mentioned last year, the inside of the berm had been scraped for road maintenance. That's why it's so sparse and weedy.  
4) Because of maintenance procedures, there were weeds inside the berm and desirable spp. on the top and outside.

**UP&L-DES BEE DOVE**

Portal Road Berm

1988 Reveg Area

Acreage: .1

Slope: 30 deg

Exposure: SW

Sample Date: 9-14 Sept 96

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	Mean
--	------	------	------	------	------	------	------	------

**SHRUBS**

<i>Chrysothamnus nauseosus</i>	15.00	25.00	5.00	0.00	0.00	5.00	10.00	8.57
<i>Atriplex confertifolia</i>	0.00	0.00	0.00	0.00	50.00	15.00	0.00	9.29
<i>Atriplex gardneri</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.71

**FORBS**

<i>Haloxylon glomeratus</i>	5.00	0.00	5.00	5.00	0.00	0.00	0.00	2.14
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**GRASSES**

<i>Elymus salinus</i>	0.00	0.00	0.00	0.00	0.00	0.00	15.00	2.14
<i>Elymus lanceolatus</i>	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.71

**COVER**

Total Living Cover	25.00	25.00	15.00	5.00	50.00	20.00	25.00	23.57
Litter	5.00	5.00	5.00	5.00	10.00	5.00	5.00	5.71
Bareground	40.00	45.00	25.00	85.00	20.00	25.00	10.00	35.71
Rock	30.00	25.00	55.00	5.00	20.00	50.00	60.00	35.00

**% COMPOSITION**

Shrubs	60.00	100.00	66.67	0.00	100.00	100.00	40.00	66.67
Forbs	20.00	0.00	33.33	100.00	0.00	0.00	0.00	21.90
Grasses	20.00	0.00	0.00	0.00	0.00	0.00	60.00	11.43

UP&L-DES BEE DOVE  
Portal Road Berm  
1988 Reveg Area  
Acreage: .1  
Slope: 30 deg  
Exposure: SW  
Sample Date: 9-14 Sept 96

SDev	Freq	
		<b>SHRUBS</b>
8.33	71.43	<i>Chrysothamnus nauseosus</i>
17.41	28.57	<i>Atriplex confertifolia</i>
1.75	14.29	<i>Atriplex gardneri</i>

		<b>FORBS</b>
2.47	42.86	<i>Halogeton glomeratus</i>

		<b>GRASSES</b>
5.25	14.29	<i>Elymus salinus</i>
1.75	14.29	<i>Elymus lanceolatus</i>

		<b>COVER</b>
12.74		Total Living Cover
1.75		Litter
22.90		Bareground
18.90		Rock

		<b>% COMPOSITION</b>
34.91		Shrubs
34.13		Forbs
21.00		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Bathhouse Road Berm

AREA: Des-Bee-Dove (1988 Interim Reveg. Area)

DATE: Sept. 12, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 30 deg.

EXPOSURE: SW

AREA: .1 acre

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex confertifolia*  
*Chrysothamnus nauseosus*

*Penstemon palmeri*  
*Kochia scoparia*

*Elymus cinereus*  
*Elymus lanceolatus*  
*Stipa hymenoides*

- NOTES: 1) Cover looked even less weedy when compared to last 1994 and 1995.
- 2) Methods: For cover we placed meter sq. quadrats at regular intervals over the entire length of the road on the top, inside and outside of the berm (n=7).

## UP&amp;L-DES BEE DOVE

Bathhouse Road Berm

1988 Interim Reveg

Acreage: .1

Slope: 30 deg

Exposure: SW

Sample Date: 12 Sept 1996

1.00 2.00 3.00 4.00 5.00 6.00 7.00 Mean

**SHRUBS**

<i>Chrysothamnus nauseosus</i>	25.00	15.00	35.00	0.00	20.00	5.00	20.00	17.14
<i>Atriplex confertifolia</i>	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.71

**FORBS**

<i>Penstemon palmeri</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.71
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**GRASSES**

<i>Elymus cinereus</i>	5.00	0.00	0.00	0.00	0.00	5.00	0.00	1.43
<i>Stipa hymenoides</i>	0.00	0.00	0.00	10.00	5.00	0.00	0.00	2.14
<i>Elymus lanceolatus</i>	5.00	10.00	10.00	0.00	0.00	25.00	0.00	7.14

**COVER**

Total Living Cover	35.00	30.00	45.00	10.00	25.00	35.00	25.00	29.29
Litter	5.00	5.00	10.00	5.00	10.00	5.00	5.00	6.43
Bareground	25.00	35.00	15.00	55.00	30.00	25.00	5.00	27.14
Rock	35.00	30.00	30.00	30.00	35.00	35.00	65.00	37.14

**% COMPOSITION**

Shrubs	71.43	50.00	77.78	0.00	80.00	14.29	100.00	56.21
Forbs	0.00	16.67	0.00	0.00	0.00	0.00	0.00	2.38
Grasses	28.57	33.33	22.22	100.00	20.00	85.71	0.00	41.41

UP&L-DES BEE DOVE  
Bathhouse Road Berm  
1988 Interim Reveg  
Acreage: .1  
Slope: 30 deg  
Exposure: SW

SDev Freq Sample Date: 12 Sept 1996

-----  
**SHRUBS**

10.97	85.71	<i>Chrysothamnus nauseosus</i>
1.75	14.29	<i>Atriplex confertifolia</i>

-----  
**FORBS**  
1.75 14.29 *Penstemon palmeri*

-----  
**GRASSES**  
2.26 28.57 *Elymus cinereus*  
3.64 28.57 *Stipa hymenoides*  
8.39 57.14 *Elymus lanceolatus*

-----  
**COVER**  
10.15 Total Living Cover  
2.26 Litter  
14.60 Bareground  
11.61 Rock

-----  
**% COMPOSITION**  
34.09 Shrubs  
5.83 Forbs  
34.16 Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Tipple Slope

AREA: Des-Bee-Dove (1988 Reveg. Area)

DATE: Sept. 9-14, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 40-45 deg.

EXPOSURE: Variable

AREA: .4 acre

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Slight considering how steep the slope is!

COVER: Because of dangerous slope, cover was estimated by nonconventional methods (see Notes).

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex confertifolia*

*Chrysothamnus nauseosus*

*Eriogonum corymbosum*

*Halogeton glomeratus*

*Penstemon palmeri*

*Elymus cinereus*

*Elymus lanceolatus*

*Stipa hymenoides*

- NOTES: 1) The slope's vegetation looked good.
- 2) Vegetation cover looked good in some areas with desirable species, while other areas were quite weedy.
- 3) Methods: As previous years, for cover we had to estimate cover from a distance because the slope was much too steep to safely place quadrats (n=7).
- 4) Some coal fines were mixed in soils/spoils.

## UP&amp;L-DES BEE DOVE

Tipple Slope

1988 Reveg Area

Acreage: .4 acre

Slope: 40-45 deg

Exposure: variable

Sample Date: 9-14 Sept 96	1.00	2.00	3.00	4.00	5.00	6.00	7.00	Mean
<b>SHRUBS</b>								
Atriplex confertifolia	0.00	10.00	0.00	0.00	0.00	0.00	0.00	1.43
Chrysothamnus nauseosus	10.00	10.00	10.00	0.00	0.00	10.00	10.00	7.14
<b>FORBS</b>								
Halogeton glomeratus	5.00	5.00	0.00	10.00	5.00	0.00	0.00	3.57
<b>GRASSES</b>								
Elymus salinus	5.00	0.00	5.00	0.00	0.00	0.00	0.00	1.43
Elymus cinereus	0.00	10.00	0.00	0.00	0.00	30.00	10.00	7.14
<b>COVER</b>								
Total Living Cover	20.00	35.00	15.00	10.00	5.00	40.00	20.00	20.71
Litter	5.00	10.00	10.00	10.00	5.00	10.00	5.00	7.86
Bareground	65.00	30.00	45.00	55.00	25.00	20.00	55.00	42.14
Rock	10.00	25.00	30.00	25.00	65.00	30.00	20.00	29.29
<b>% COMPOSITION</b>								
Shrubs	50.00	57.14	66.67	0.00	0.00	25.00	50.00	35.54
Forbs	25.00	14.29	0.00	100.00	100.00	0.00	0.00	34.18
Grasses	25.00	28.57	33.33	0.00	0.00	75.00	50.00	30.27

UP&L-DES BEE DOVE  
Tipple Slope  
1988 Reveg Area  
Acreage: .4 acre  
Slope: 40-45 deg  
Exposure: variable  
Sample Date: 9-14 Sept 96

SDev	Freq	
		<b>SHRUBS</b>
3.50	14.29	<i>Atriplex confertifolia</i>
4.52	71.43	<i>Chrysothamnus nauseosus</i>

3.50	57.14	<b>FORBS</b>
		<i>Halogeton glomeratus</i>

2.26	28.57	<b>GRASSES</b>
10.30	42.86	<i>Elymus salinus</i>
		<i>Elymus cinereus</i>

11.78		<b>COVER</b>
2.47		Total Living Cover
16.00		Litter
15.91		Bareground
		Rock

25.33		<b>% COMPOSITION</b>
42.51		Shrubs
24.68		Forbs
		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Sediment Storage Slope

AREA: Des-Bee-Dove (1988 Interim Reveg. Area)

DATE: Sept. 9-14, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 3 - 5 deg.

EXPOSURE: S SE

AREA: 4.4 acres

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Slight to moderate erosion in localized areas.

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex confertifolia*  
*Atriplex gardneri*  
*Chrysothamnus nauseosus*  
*Sarcobatus vermiculatus*  
*Suaeda torreyana*

*Atriplex powellii*  
*Halogeton glomeratus*  
*Kochia scoparia*  
*Malcomia africana*  
*Suaeda calceoliformis*

*Stipa hymenoides*  
*Sitanion hystrrix*

- NOTES: 1) As last year, there was poor grass and forb cover this year.
- 2) Methods: For cover we placed meter sq. quadrats at placed randomly over entire site (n=10).

UP&L-DES BEE DOVE  
 Sediment Storage Slope  
 1988 Interim Reveg  
 Acreage: 4.4 acre  
 Slope: 3 - 5 deg  
 Exposure: S,SE  
 Sample Date: 9-14 Sept 96

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
<b>SHRUBS</b>								
<i>Chrysothamnus nauseosus</i>	0.00	0.00	20.00	5.00	0.00	0.00	0.00	0.00
<i>Atriplex gardneri</i> var. <i>cuneat</i>	50.00	5.00	0.00	45.00	0.00	0.00	40.00	2.00
<b>FORBS</b>								
<i>Halogeton glomeratus</i>	0.00	0.00	0.00	0.00	5.00	0.00	0.00	3.00
<i>Sarcobatus vermiculatus</i>	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
<i>Malcomia africana</i>	0.00	0.00	10.00	0.00	5.00	0.00	0.00	0.00
<i>Suaeda torreyana</i>	0.00	0.00	0.00	0.00	35.00	0.00	0.00	40.00
<b>GRASSES</b>								
<i>Sitanion hystrix</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>COVER</b>								
Total Living Cover	50.00	10.00	30.00	50.00	45.00	40.00	40.00	45.00
Litter	5.00	4.00	9.00	5.00	4.00	5.00	10.00	10.00
Bareground	40.00	85.00	60.00	40.00	50.00	50.00	40.00	30.00
Rock	5.00	1.00	1.00	5.00	1.00	5.00	10.00	15.00
<b>% COMPOSITION</b>								
Shrubs	100.00	50.00	66.67	100.00	0.00	0.00	100.00	4.44
Forbs	0.00	0.00	33.33	0.00	100.00	100.00	0.00	95.56
Grasses	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00

**UP&L-DES BEE DOVE**  
 Sediment Storage Slope  
 1988 Interim Reveg  
 Acreage: 4.4 acre  
 Slope: 3 - 5 deg  
 Exposure: S,SE  
 Sample Date: 9-14 Sept 96

9.00	10.00	Mean	SDev	Freq	
0.00	0.00	2.50	6.02	20.00	<b>SHRUBS</b>
25.00	0.00	16.70	19.98	60.00	<i>Chrysothamnus nauseosus</i> <i>Atriplex gardneri</i> var. <i>cuneata</i>
5.00	20.00	3.30	5.92	40.00	<b>FORBS</b>
0.00	0.00	4.00	12.00	10.00	<i>Halogeton glomeratus</i>
0.00	0.00	1.50	3.20	20.00	<i>Sarcobatus vermiculatus</i>
5.00	0.00	8.00	14.87	30.00	<i>Malcomia africana</i> <i>Suaeda torreyana</i>
0.00	0.00	0.50	1.50	10.00	<b>GRASSES</b> <i>Sitanion hystrix</i>
35.00	20.00	36.50	12.46		<b>COVER</b>
5.00	5.00	6.20	2.32		Total Living Cover
50.00	65.00	51.00	14.97		Litter
10.00	10.00	6.30	4.54		Bareground
					Rock
71.43	0.00	49.25	42.20		<b>% COMPOSITION</b>
28.57	100.00	45.75	44.87		Shrubs
0.00	0.00	5.00	15.00		Forbs
					Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Sediment Pond Banks

AREA: Des-Bee-Dove (1988 Interim Reveg Area)

DATE: Sept. 9-14, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 30 deg.

EXPOSURE: E & W

AREA: .9 acre

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex confertifolia*

*Atriplex gardneri*

*Chrysothamnus nauseosus*

*Malcomia africana*

*Machaeranthera canescens*

*Malcomia africana*

*Penstemon palmeri*

*Agropyron cristatum*

*Elymus lanceolatus*

*Elymus spicatus*

NOTES: 1) We sampled regularly around the two banks (n=10).

## UP&amp;L-DES BEE DOVE

Sediment Pond Banks

1988 Interim Reveg

Acreage: .9 acre

Slope: 30 deg

## 1 - 5 West Side Pond

## 6 - 10 East Side Pond

Exposure: E &amp; W

Sample Date: 9-14 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

## SHRUBS

Atriplex gardneri	20.00	10.00	35.00	0.00	0.00	0.00	20.00	0.00
Chrysothamnus nauseosus	15.00	15.00	15.00	65.00	60.00	25.00	0.00	30.00

## FORBS

Machaeranthera canescens	5.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Malcomia africana	0.00	0.00	0.00	0.00	0.00	5.00	0.00	10.00
Penstemon palmeri	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00

## GRASSES

Agropyron cristatum	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus spicatus	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
Elymus lanceolatus	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00

## COVER

Total Living Cover	40.00	35.00	50.00	65.00	70.00	30.00	30.00	40.00
Litter	5.00	5.00	10.00	20.00	10.00	5.00	5.00	10.00
Bareground	40.00	40.00	30.00	10.00	10.00	55.00	55.00	40.00
Rock	15.00	20.00	10.00	5.00	10.00	10.00	10.00	10.00

## % COMPOSITION

Shrubs	87.50	71.43	100.00	100.00	85.71	83.33	66.67	75.00
Forbs	12.50	14.29	0.00	0.00	0.00	16.67	0.00	25.00
Grasses	0.00	14.29	0.00	0.00	14.29	0.00	33.33	0.00

## UP&amp;L-DES BEE DOVE

Sediment Pond Banks

1988 Interim Reveg

Acreage: .9 acre

Slope: 30 deg

Exposure: E &amp; W

Sample Date: 9-14 Sept 96

9.00 10.00 Mean SDev Freq

5.00 0.00 9.00 11.58 50.00  
0.00 15.00 24.00 21.19 80.00

## SHRUBS

*Atriplex gardneri*  
*Chrysothamnus nauseosus*0.00 0.00 0.70 1.55 20.00  
30.00 20.00 6.50 10.01 40.00  
0.00 0.00 0.30 0.90 10.00

## FORBS

*Machaeranthera canescens*  
*Malcomia africana*  
*Penstemon palmeri*0.00 0.00 0.50 1.50 10.00  
0.00 0.00 1.00 3.00 10.00  
0.00 0.00 1.00 3.00 10.00

## GRASSES

*Agropyron cristatum*  
*Elymus spicatus*  
*Elymus lanceolatus*35.00 35.00 43.00 13.45  
5.00 5.00 8.00 4.58  
50.00 50.00 38.00 15.84  
10.00 10.00 11.00 3.74

## COVER

Total Living Cover  
Litter  
Bareground  
Rock14.29 42.86 72.68 25.18  
85.71 57.14 21.13 27.22  
0.00 0.00 6.19 10.66

## % COMPOSITION

Shrubs  
Forbs  
Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Haul Road Bench

AREA: Des-Bee-Dove (1986 Reveg. Area)

DATE: Sept. 9-14, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 3 - 5 deg.

EXPOSURE: SW

ANIMAL USE/DISTURBANCE: Slight

EROSION: Slight

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex cuneata* var. *gardneri*

*Atriplex canescens*

*Atriplex confertifolia*

*Halogeton glomeratus*

*Kochia scoparia*

*Agropyron cristatum*

*Elymus cinereus*

*Elymus lanceolatus*

*Sitanion hystrrix*

*Stipa hymenoides*

- NOTES: 1) Quantitative Methods: We placed a point at regular intervals over the area. From these points we placed the quadrats in random locations (n=10).
- 2) There were patches of desirable species and patches of weedy species evident in 1994, 1995 and 1996.
- 3) There is some good shrub establishment occurring.
- 4) Contour rows seem to be adequately controlling erosion.

## UP&amp;L-DES BEE DOVE

Haul Road Bench

1986 Reveg Area

Acreage:

Slope: 3-5 deg

Exposure: SW

Sample Date: 9-14 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

## SHRUBS

<i>Chrysothamnus nauseosus</i>	5.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
<i>Atriplex gardneri</i>	25.00	0.00	25.00	0.00	5.00	0.00	25.00	0.00

## FORBS

<i>Halogeton glomeratus</i>	0.00	0.00	10.00	20.00	0.00	0.00	0.00	15.00
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## GRASSES

<i>Agropyron cristatum</i>	10.00	0.00	0.00	0.00	0.00	10.00	10.00	5.00
<i>Elymus lanceolatus</i>	0.00	20.00	0.00	0.00	30.00	0.00	0.00	0.00
<i>Stipa hymenoides</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.00	10.00

## COVER

Total Living Cover	40.00	25.00	35.00	20.00	35.00	20.00	35.00	30.00
Litter	5.00	10.00	5.00	5.00	5.00	5.00	20.00	5.00
Bareground	45.00	40.00	50.00	50.00	30.00	70.00	35.00	55.00
Rock	10.00	25.00	10.00	25.00	30.00	5.00	10.00	10.00

## % COMPOSITION

Shrubs	75.00	0.00	71.43	0.00	14.29	50.00	71.43	0.00
Forbs	0.00	0.00	28.57	100.00	0.00	0.00	0.00	50.00
Grasses	25.00	100.00	0.00	0.00	85.71	50.00	28.57	50.00

## UP&amp;L-DES BEE DOVE

Haul Road Bench

1986 Reveg Area

Acreage:

Slope: 3-5 deg

Exposure: SW

Sample Date: 9-14 Sept 96

9.00 10.00 Mean SDev Freq

0.00 0.00 1.50 3.20 20.00  
15.00 0.00 9.50 11.06 50.00

## SHRUBS

*Chrysothamnus nauseosus*  
*Atriplex gardneri*

10.00 0.00 5.50 7.23 40.00

## FORBS

*Halogeton glomeratus*0.00 5.00 4.00 4.36 50.00  
0.00 0.00 5.00 10.25 20.00  
0.00 30.00 4.50 9.07 30.00

## GRASSES

*Agropyron cristatum*  
*Elymus lanceolatus*  
*Stipa hymenoides*25.00 35.00 30.00 6.71  
5.00 10.00 7.50 4.61  
65.00 50.00 49.00 11.79  
5.00 5.00 13.50 8.96

## COVER

Total Living Cover  
Litter  
Bareground  
Rock60.00 0.00 34.21 32.29  
40.00 0.00 21.86 31.84  
0.00 100.00 43.93 38.07

## % COMPOSITION

Shrubs  
Forbs  
Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Beehive Substation Slope

AREA: Des-Bee-Dove (1986 Reveg. Area)

DATE: Sept. 9-14, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 35 deg.

EXPOSURE: S

AREA: .1 acre

ANIMAL USE/DISTURBANCE: Slight

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex confertifolia*  
*Chrysothamnus nauseosus*

*Agropyron cristatum*  
*Elymus lanceolatus*  
*Elymus salinus*  
*Elymus cinereus*  
*Elymus spicatus*  
*Stipa hymenoides*

- NOTES: 1) As was the case last year, the area continues to maintain good spp. diversity.
- 2) Methods: For cover we placed meter sq. quadrats at regular intervals over area (n=6).
- 3) 50% of the samples were estimated from longer distances due to rain that cause slippery surfaces.

UP&L-DES BEE DOVE  
 Beehive Substation Slope  
 1986 Reveg Area  
 Acreage: .1  
 Slope: 35 deg  
 Exposure: S

Sample Date: 9-14 Sept 96	1.00	2.00	3.00	4.00	5.00	6.00	Mean	SDev
<b>SHRUBS</b>								
Chrysothamnus nauseosus	5.00	5.00	10.00	5.00	10.00	15.00	8.33	3.73
Atriplex confertifolia	0.00	0.00	0.00	10.00	0.00	0.00	1.67	3.73

### FORBS

GRASSES	1.00	2.00	3.00	4.00	5.00	6.00	Mean	SDev
Elymus smithii	10.00	0.00	0.00	0.00	0.00	0.00	1.67	3.73
Agropyron cristatum	0.00	0.00	30.00	10.00	5.00	0.00	7.50	10.70
Elymus lanceolatus	30.00	30.00	0.00	10.00	25.00	20.00	19.17	10.96

COVER	1.00	2.00	3.00	4.00	5.00	6.00	Mean	SDev
Total Living Cover	45.00	35.00	40.00	35.00	40.00	35.00	38.33	3.73
Litter	10.00	10.00	10.00	5.00	10.00	5.00	8.33	2.36
Bareground	25.00	40.00	30.00	20.00	25.00	10.00	25.00	9.13
Rock	20.00	15.00	20.00	40.00	25.00	50.00	28.33	12.47

% COMPOSITION	1.00	2.00	3.00	4.00	5.00	6.00	Mean	SDev
Shrubs	11.11	14.29	25.00	42.86	25.00	42.86	26.85	12.42
Forbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	88.89	85.71	75.00	57.14	75.00	57.14	73.15	12.42

UP&L-DES BEE DOVE  
Beehive Substation Slope  
1986 Reveg Area  
Acreage: .1  
Slope: 35 deg  
Exposure: S  
Sample Date: 9-14 Sept 96

Freq	SHRUBS
100.00	<i>Chrysothamnus nauseosus</i>
16.67	<i>Atriplex confertifolia</i>

#### FORBS

	GRASSES
16.67	<i>Elymus smithii</i>
50.00	<i>Agropyron cristatum</i>
83.33	<i>Elymus lanceolatus</i>

-----  
COVER  
Total Living Cover  
Litter  
Bareground  
Rock

-----  
% COMPOSITION  
Shrubs  
Forbs  
Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Sediment Pond Area

AREA: Des-Bee-Dove (1985 Reveg. Area)

DATE: Sept. 9-14, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 0-10 deg.

EXPOSURE: S

AREA: .7 acre

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (See quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quant. data sheet)

*Atriplex canescens*

*Atriplex confertifolia*

*Chrysothamnus nauseosus*

*Chrysothamnus viscidiflorus*

*Gutierrezia sarothrae*

*Sarcobatus vermiculatus*

*Malcomia africana*

*Agropyron cristatum*

*Bromus tectorum*

*Elymus salinus*

*Elymus spicatus*

*Hilaria jamesii*

*Stipa hymenoides*

NOTES: 1) Like the last few years, the area looked very good.

2) Sampling was done randomly around entire area (n=10).

## UP&amp;L-DES BEE DOVE

Sediment Pond Area

1985 Reveg Area

Acreage: .7

Slope: 0-10 deg

Exposure: S

Sample Date: 9-14 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

## SHRUBS

Atriplex canescens	5.00	15.00	0.00	0.00	5.00	0.00	40.00	0.00
Gutierrezia sarothrae	0.00	0.00	0.00	25.00	0.00	5.00	5.00	10.00
Chrysothamnus nauseosus	10.00	0.00	0.00	5.00	0.00	0.00	5.00	0.00
Atriplex confertifolia	0.00	0.00	30.00	0.00	20.00	35.00	0.00	0.00
Sarcobatus vermiculatus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.00

## FORBS

## GRASSES

Stipa hymenoides	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
Stipa comata	5.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
Bromus tectorum	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus spicatus	5.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
Agropyron cristatum	5.00	20.00	10.00	0.00	15.00	0.00	0.00	0.00

## COVER

Total Living Cover	40.00	35.00	40.00	40.00	45.00	50.00	50.00	45.00
Litter	10.00	10.00	10.00	10.00	5.00	10.00	15.00	25.00
Bareground	20.00	30.00	15.00	25.00	15.00	15.00	20.00	20.00
Rock	30.00	25.00	35.00	25.00	35.00	25.00	15.00	10.00

## % COMPOSITION

Shrubs	37.50	42.86	75.00	75.00	55.56	80.00	100.00	100.00
Forbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	62.50	57.14	25.00	25.00	44.44	20.00	0.00	0.00

## UP&amp;L-DES BEE DOVE

Sediment Pond Area

1985 Reveg Area

Acreage: .7

Slope: 0-10 deg

Exposure: S

Sample Date: 9-14 Sept 96

9.00 10.00 Mean SDev Freq

10.00	0.00	7.50	11.88	50.00
5.00	30.00	8.00	10.30	60.00
0.00	0.00	2.00	3.32	30.00
0.00	0.00	8.50	13.43	30.00
0.00	0.00	3.50	10.50	10.00

## SHRUBS

*Atriplex canescens*  
*Gutierrezia sarothrae*  
*Chrysothamnus nauseosus*  
*Atriplex confertifolia*  
*Sarcobatus vermiculatus*

## FORBS

0.00	0.00	0.50	1.50	10.00
0.00	5.00	2.00	3.32	30.00
5.00	5.00	2.00	3.32	30.00
0.00	0.00	1.50	3.20	20.00
10.00	10.00	7.00	6.78	60.00

## GRASSES

*Stipa hymenoides*  
*Stipa comata*  
*Bromus tectorum*  
*Elymus spicatus*  
*Agropyron cristatum*

30.00	50.00	42.50	6.42
10.00	10.00	11.50	5.02
20.00	20.00	20.00	4.47
40.00	20.00	26.00	8.89

## COVER

Total Living Cover  
Litter  
Bareground  
Rock

50.00	60.00	67.59	20.96
0.00	0.00	0.00	0.00
50.00	40.00	32.41	20.96

## % COMPOSITION

Shrubs  
Forbs  
Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Bathhouse Slope

AREA: Des-Bee-Dove (1984 Reveg. Area)

DATE: Sept. 9-14, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 25 deg.

EXPOSURE: Variable

AREA: 2.3 acre

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)  
*Chrysothamnus nauseosus*

*Eriogonum corymbosum*

*Aster glaucodes*

*Kochia scoparia*

*Sisymbrium altissimum*

*Agropyron cristatum*

*Bromus tectorum*

*Elymus lanceolatus*

*Elymus smithii*

*Elymus salinus*

*Stipa hymenoides*

*Elymus hispidus*

*Elymus cinereus*

*Poa pratensis*

*Elymus spicatus*

- NOTES:
- 1) This site was in "excellent" condition.
  - 2) Vegetative cover remains good & diverse.
  - 3) Methods: For cover (n=10) we placed meter sq. quadrats at regular intervals at different elevations at right angles on the slope to attempt to adequately represent it.

UP&L-DES BEE DOVE

Bathhouse Slope

1984 Reveg Area

Acreage: 2.3 acre

Slope: 25 deg.

Exposure: variable

Sample Date: 9-14 Sept 96

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
<b>SHRUBS</b>								
Eriogonum corymbosum	5.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Chrysothamnus nauseosus	10.00	10.00	10.00	5.00	30.00	10.00	5.00	35.00
<b>FORBS</b>								
Sisymbrium altissimum	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>GRASSES</b>								
Elymus cinereus	0.00	0.00	0.00	5.00	0.00	5.00	40.00	0.00
Stipa hymenoides	0.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00
Bromus tectorum	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	30.00	0.00	0.00	20.00	5.00	15.00	0.00	10.00
Agropyron cristatum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00
Elymus salinus	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus hispidus	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
Poa pratensis	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
Elymus spicatus	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus smithii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>COVER</b>								
Total Living Cover	65.00	35.00	50.00	40.00	40.00	30.00	45.00	70.00
Litter	10.00	10.00	10.00	10.00	5.00	10.00	10.00	5.00
Bareground	10.00	15.00	15.00	25.00	10.00	25.00	20.00	5.00
Rock	15.00	40.00	25.00	25.00	45.00	35.00	25.00	20.00
<b>% COMPOSITION</b>								
Shrubs	23.08	28.57	40.00	12.50	75.00	33.33	11.11	50.00
Forbs	0.00	14.29	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	76.92	57.14	60.00	87.50	25.00	66.67	88.89	50.00

## UP&amp;L-DES BEE DOVE

Bathhouse Slope

1984 Reveg Area

Acreage: 2.3 acre

Slope: 25 deg.

Exposure: variable

Sample Date: 9-14 Sept 96

9.00 10.00 Mean SDev Freq

0.00 0.00 1.50 3.20 20.00  
10.00 25.00 15.00 10.25 100.00

## SHRUBS

*Eriogonum corymbosum*  
*Chrysothamnus nauseosus*

0.00 0.00 0.50 1.50 10.00

## FORBS

*Sisymbrium altissimum*0.00 0.00 5.00 11.83 30.00  
0.00 0.00 3.00 9.00 10.00  
0.00 0.00 1.00 3.00 10.00  
0.00 0.00 8.00 10.05 50.00  
0.00 0.00 2.50 7.50 10.00  
25.00 0.00 4.50 9.07 20.00  
0.00 0.00 0.50 1.50 10.00  
0.00 0.00 1.00 3.00 10.00  
0.00 0.00 1.00 3.00 10.00  
0.00 15.00 1.50 4.50 10.00

## GRASSES

*Elymus cinereus*  
*Stipa hymenoides*  
*Bromus tectorum*  
*Elymus lanceolatus*  
*Agropyron cristatum*  
*Elymus salinus*  
*Elymus hispidus*  
*Poa pratensis*  
*Elymus spicatus*  
*Elymus smithii*35.00 40.00 45.00 12.45  
5.00 15.00 9.00 3.00  
10.00 20.00 15.50 6.50  
50.00 25.00 30.50 10.83

## COVER

Total Living Cover  
Litter  
Bareground  
Rock28.57 62.50 36.47 19.72  
0.00 0.00 1.43 4.29  
71.43 37.50 62.11 19.61

## % COMPOSITION

Shrubs  
Forbs  
Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Materials Yard Slope

AREA: Des-Bee-Dove (1984 Reveg. Area)

DATE: Sept. 12, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 20-25 deg.

EXPOSURE: SE

AREA: 1.1 acre

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (See quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data.)

*Atriplex confertifolia*

*Atriplex gardneri*

*Chrysothamnus nauseosus*

*Aster chilensis*

*Medicago sativa*

*Halogeton glomeratus*

*Bromus tectorum*

*Elymus cinereus*

*Elymus lanceolatus*

*Elymus smithii*

*Elymus spicatus*

*Stipa hymenoides*

*Agropyron cristatum*

NOTES: 1) Site looked "excellent". A dry summer, but site looked excellent last year.

2) Methods: For cover we placed meter sq. quadrats at random locations over the entire slope (n=10).

**UP&L-DES BEE DOVE**

Material Yard Slope

1984 Reveg Area

Acreage: 1.1 acre

Slope: 20-25 deg

Exposure: SE

Sample Date: 9-14 Sept 96

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
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**SHRUBS**

<i>Chrysothamnus nauseosus</i>	25.00	10.00	20.00	20.00	5.00	5.00	5.00	10.00
<i>Atriplex gardneri</i>	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00

**FORBS**

<i>Aster chilensis</i>	0.00	0.00	0.00	0.00	0.00	5.00	0.00	5.00
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**GRASSES**

<i>Elymus cinereus</i>	0.00	5.00	0.00	0.00	0.00	0.00	10.00	0.00
<i>Agropyron cristatum</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus spicatus</i>	15.00	10.00	10.00	0.00	30.00	30.00	30.00	0.00
<i>Elymus lanceolatus</i>	15.00	0.00	5.00	10.00	0.00	10.00	5.00	20.00
<i>Stipa hymenoides</i>	0.00	5.00	5.00	0.00	0.00	5.00	10.00	0.00

**COVER**

Total Living Cover	55.00	30.00	50.00	30.00	35.00	55.00	60.00	35.00
Litter	10.00	5.00	5.00	5.00	5.00	10.00	5.00	10.00
Bareground	15.00	25.00	20.00	25.00	25.00	15.00	10.00	30.00
Rock	20.00	40.00	25.00	40.00	35.00	20.00	25.00	25.00

**% COMPOSITION**

Shrubs	45.45	33.33	60.00	66.67	14.29	9.09	8.33	28.57
Forbs	0.00	0.00	0.00	0.00	0.00	9.09	0.00	14.29
Grasses	54.55	66.67	40.00	33.33	85.71	81.82	91.67	57.14

UP&L-DES BEE DOVE

Material Yard Slope

1984 Reveg Area

Acreage: 1.1 acre

Slope: 20-25 deg

Exposure: SE

Sample Date: 9-14 Sept 96

9.00	10.00	Mean	SDev	Freq
------	-------	------	------	------

**SHRUBS**

5.00	15.00	12.00	7.14	100.00
0.00	0.00	1.00	3.00	10.00

*Chrysothamnus nauseosus*  
*Atriplex gardneri*

10.00	10.00	3.00	4.00	40.00
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**FORBS**

*Aster chilensis*

0.00	0.00	1.50	3.20	20.00
5.00	0.00	0.50	1.50	10.00
0.00	15.00	14.00	11.79	70.00
20.00	10.00	9.50	6.87	80.00
0.00	0.00	2.50	3.35	40.00

**GRASSES**

*Elymus cinereus*  
*Agropyron cristatum*  
*Elymus spicatus*  
*Elymus lanceolatus*  
*Stipa hymenoides*

40.00	50.00	44.00	10.68
10.00	10.00	7.50	2.50
30.00	20.00	21.50	6.34
20.00	20.00	27.00	7.81

**COVER**

Total Living Cover  
Litter  
Bareground  
Rock

12.50	30.00	30.82	19.87
25.00	20.00	6.84	9.19
62.50	50.00	62.34	18.40

**% COMPOSITION**

Shrubs  
Forbs  
Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Test Plot (1989)

AREA: Des-Bee-Dove

DATE: Sept. 11, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 26 deg.

EXPOSURE: S

AREA: .6 acre

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Moderate

COVER: (see quantitative data)

PLANT SPECIES PLANTED:

*Atriplex canescens*  
*Atriplex corrugata*  
*Atriplex confertifolia*  
*Ceratoides lanata*  
*Kochia prostrata*

*Linum lewisii*  
*Melilotus officinalis*  
*Sphaeralcea coccinea*

*Elymus lanceolatus*  
*Elymus smithii*  
*Elymus cinereus*  
*Stipa hymenoides*  
*Sporobolus airoides*

PLANT SPECIES OBSERVED:

*Sarcobatus vermiculatus*  
*Suaeda torreyana*  
*Atriplex canescens*  
*Atriplex gardneri*

*Atriplex powellii*  
*Kochia scoparia*  
*Bassia hyssopifolia*  
*Kochia scoparia*  
*Halogeton glomeratus*

*Elymus lanceolatus*

- NOTES: 1) The vegetation was dominated by weedy species. Woody species density was low.
- 2) Qualitative sampling only.
- 3) Too wet to walk on without starting erosion.

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Test Plot (1992)

AREA: Des-Bee-Dove

DATE: Sept. 2-5, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 3-5 deg.

EXPOSURE: SW

ANIMAL USE/DISTURBANCE:

EROSION: Slight

COVER: (see quantitative data)

PLANT SPECIES OBSERVED

*Ceratoides lanata*

*Atriplex powellii*  
*Kochia scoparia*  
*Malcomia africana*  
*Melilotus officinalis*  
*Bassia hyssopifolia*  
*Halogeton glomeratus*

*Stipa hymenoides*  
*Bromus tectorum*  
*Elymus lanceolatus*  
*Elymus smithii*  
*Elymus trachycaulus*  
*Elymus cinereus*  
*Elymus salinus*  
*Sitanion hystrix*  
*Stipa hymenoides*

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Test Plots '92

WOODY SPECIES DENSITY:  
**1994**

Plot	Plant Names	Mean No./Acre
1.	<i>Ceratoides lanata</i> Total	<u>1763.14</u>
2.	<i>Ceratoides lanata</i> Total	<u>3630.00</u>
3.	<i>Ceratoides lanata</i> Total	<u>207.43</u>
4.	<i>Ceratoides lanata</i> Total	<u>1244.57</u>
5.	<i>Ceratoides lanata</i> Total	<u>829.72</u>
6(8).	<i>Ceratoides lanata</i> Total	<u>207.43</u>
7.	<i>Ceratoides lanata</i> Total	<u>0.00</u>
8.	<i>Ceratoides lanata</i> Total	<u>103.71</u>

**1995**

Plot	Plant Names	Mean No./Acre
1.	<i>Ceratoides lanata</i> <i>Atriplex canescens</i>	1348.23 311.13
	Total	<u>1659.36</u>
2.	<i>Ceratoides lanata</i> <i>Atriplex canescens</i>	3837.27 207.42
	Total	<u>3630.00</u>
3.	<i>Ceratoides lanata</i> Total	<u>414.84</u>

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Test Plots '92

4.	<i>Ceratooides lanata</i>	
	Total	<u>2489.04</u>
5.	<i>Ceratooides lanata</i>	829.68
	<i>Atriplex canescens</i>	207.42
	Total	<u>1037.10</u>
6(8).	<i>Ceratooides lanata</i>	414.84
	<i>Atriplex canescens</i>	207.42
	Total	<u>622.26</u>
7.	<i>Ceratooides lanata</i>	
	Total	<u>0.00</u>
8.	<i>Ceratooides lanata</i>	
	Total	<u>414.84</u>

**1996**

Plot	Plant Names	Mean No./Acre
1.	<i>Ceratooides lanata</i>	
	Total	<u>1244.57</u>
2.	<i>Ceratooides lanata</i>	
	Total	<u>4252.28</u>
3.	<i>Ceratooides lanata</i>	
	Total	<u>622.28</u>
4.	<i>Ceratooides lanata</i>	
	Total	<u>3007.71</u>
	<i>Atriplex canescens</i>	
	Total	<u>207.43</u>
5.	<i>Ceratooides lanata</i>	
	Total	<u>553.15</u>
	<i>Atriplex canescens</i>	
	Total	<u>69.14</u>
6(8).	<i>Ceratooides lanata</i>	
	Total	<u>622.29</u>

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Test Plots '92

7.	<i>Ceratoides lanata</i>	
	Total	<u>103.71</u>
8.	<i>Ceratoides lanata</i>	
	Total	<u>553.39</u>
	<i>Atriplex canescens</i>	
	Total	<u>88.90</u>

- NOTES:
- 1) Plot looked better this year.
  - 2) We did not look at treatments before sampling as an attempt to decrease bias.
  - 3) For cover we put 3 quadrats ( $n=3$ , tot.  $n=72$ ) in each 10' X 14' plot, side by side leaving the edges for a buffer. Therefore, nearly the entire plot was sampled.
  - 4) For density we counted all within each plot.
  - 5) Refer to the map for the order.
  - 6) Most of the desirable plant species were becoming established in the contour depressions where moisture collects.
  - 7) Density increase in each treatment without exception.
  - 8) A task force team met on this plot this year. Summaries were made of the data and are available upon request.

NORTH

- 7) 1994 data was included for comparisons.

2		
7	3	
1	8	4
3	7	*6(8)
3	2	7
*6(8)	4	5
1	8	1
5	*6(8)	8
3	4	
		2

1. Rocky Soil
2. Coal Waste
3. Live Earth
4. Rocky Soil & Live Earth
5. Coal Waste & Live Earth
6. Sewage Slud.
7. Native Seed
8. Nursery Seed

UP&L-DES BEE DOVE  
TEST PLOT (1992)

Subplots #1

Acreage:

Slope: 3-5 deg

1-3 = 1A

4-6 = 1B

7-9 = 1C

Exposure: SW

Sample Date: 4 Sept 96

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
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**SHRUBS**

Ceratoides lanata	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Atriplex canescens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chrysothamnus nauseosus	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Ceratoides lanata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**FORBS**

Halogeton glomeratus	0.00	0.00	0.00	5.00	20.00	4.00	0.00	5.00
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**GRASSES**

Elymus lanceolatus	15.00	5.00	0.00	10.00	0.00	0.00	30.00	0.00
Elymus smithii	10.00	0.00	20.00	0.00	0.00	5.00	0.00	20.00
Stipa comata	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**COVER**

Total Living Cover	30.00	10.00	20.00	15.00	20.00	10.00	30.00	25.00
Litter	30.00	20.00	20.00	20.00	20.00	10.00	25.00	55.00
Bareground	20.00	60.00	50.00	50.00	35.00	60.00	25.00	10.00
Rock	20.00	10.00	10.00	15.00	25.00	20.00	20.00	10.00

**% COMPOSITION**

Shrubs	0.00	50.00	0.00	0.00	0.00	10.00	0.00	0.00
Forbs	0.00	0.00	0.00	33.33	100.00	40.00	0.00	20.00
Grasses	100.00	50.00	100.00	66.67	0.00	50.00	100.00	80.00

UP&L-DES BEE DOVE  
TEST PLOT (1992)  
Subplots #1  
Acreage:  
Slope: 3-5 deg  
Exposure: SW  
Sample Date: 4 Sept 96

9.00	Mean	SDev	Freq	
				<b>SHRUBS</b>
0.00	0.11	0.31	11.11	<i>Ceratoides lanata</i>
5.00	0.56	1.57	11.11	<i>Atriplex canescens</i>
0.00	0.56	1.57	11.11	<i>Chrysothamnus nauseosus</i>
5.00	0.56	1.57	11.11	<i>Ceratoides lanata</i>

0.00	3.78	6.12	44.44	<b>FORBS</b> <i>Halogeton glomeratus</i>
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20.00	8.89	10.21	55.56	<b>GRASSES</b>
10.00	7.22	7.86	55.56	<i>Elymus lanceolatus</i>
0.00	0.56	1.57	11.11	<i>Elymus smithii</i>
				<i>Stipa comata</i>

40.00	22.22	9.46	<b>COVER</b>
30.00	25.56	11.89	Total Living Cover
15.00	36.11	18.38	Litter
15.00	16.11	5.15	Bareground
			Rock

25.00	9.44	16.41	<b>% COMPOSITION</b>
0.00	21.48	31.55	Shrubs
75.00	69.07	30.78	Forbs
			Grasses

## UP&amp;L-DES BEE DOVE

## TEST PLOT (1992)

## Subplots #2

## Acreage:

Slope: 3-5 deg

1-3 = 2A

4-6 = 2B

7-9 = 2C

Exposure: SW

Sample Date: 4 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

## SHRUBS

Ceratoides lanata

3.00 0.00 5.00 0.00 10.00 5.00 0.00 20.00

## FORBS

Halogenon glomeratus

0.00 3.00 0.00 0.00 0.00 0.00 0.00 0.00

## GRASSES

Stipa comata	0.00	0.00	10.00	0.00	0.00	10.00	0.00	0.00
Elymus lanceolatus	27.00	0.00	5.00	25.00	15.00	5.00	20.00	0.00
Elymus smithii	0.00	7.00	10.00	0.00	10.00	0.00	25.00	15.00
Agropyron cristatum	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
Elymus cinereus	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00

## COVER

Total Living Cover	30.00	10.00	30.00	35.00	35.00	20.00	45.00	35.00
Litter	60.00	20.00	45.00	20.00	5.00	5.00	25.00	25.00
Bareground	5.00	5.00	5.00	20.00	10.00	55.00	10.00	10.00
Rock	5.00	65.00	20.00	25.00	50.00	20.00	20.00	30.00

## % COMPOSITION

Shrubs	10.00	0.00	16.67	0.00	28.57	25.00	0.00	57.14
Forbs	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	90.00	70.00	83.33	100.00	71.43	75.00	100.00	42.86

UP&L-DES BEE DOVE  
TEST PLOT (1992)  
Subplots #2  
Acreage:  
Slope: 3-5 deg  
Exposure: SW  
Sample Date: 4 Sept 96

	Mean	SDev	Freq	
9.00				<b>SHRUBS</b>
10.00	5.89	6.21	66.67	<i>Ceratoides lanata</i>

	0.33	0.94	11.11	
0.00				<b>FORBS</b>
				<i>Halogeton glomeratus</i>

	2.22	4.16	22.22	
0.00				<b>GRASSES</b>
5.00	11.33	9.99	77.78	<i>Stipa comata</i>
10.00	8.56	7.75	66.67	<i>Elymus lanceolatus</i>
0.00	0.56	1.57	11.11	<i>Elymus smithii</i>
0.00	0.56	1.57	11.11	<i>Agropyron cristatum</i>
				<i>Elymus cinereus</i>

	29.44	9.56		
25.00				<b>COVER</b>
25.00	25.56	16.57		Total Living Cover
10.00	14.44	14.99		Litter
40.00	30.56	17.23		Bareground
				Rock

	19.71	18.82		
40.00				<b>% COMPOSITION</b>
0.00	3.33	9.43		Shrubs
60.00	76.96	17.66		Forbs
				Grasses

## UP&amp;L-DES BEE DOVE

TEST PLOT (1992)

Subplots #3

Acreage:

Slope: 3-5 deg

1-3 = 3A

4-6 = 3B

7-9 = 3C

Exposure: SW

Sample Date: 4 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

## SHRUBS

*Ceratoides lanata*

0.00 0.00 5.00 0.00 0.00 0.00 0.00 0.00

## FORBS

*Halogeton glomeratus*

5.00 7.00 0.00 5.00 7.00 0.00 0.00 0.00

## GRASSES

*Elymus lanceolatus*

15.00 3.00 10.00 5.00 5.00 10.00 15.00 0.00

*Elymus smithii*

0.00 0.00 0.00 0.00 5.00 10.00 10.00 25.00

*Stipa comata*

5.00 0.00 0.00 0.00 3.00 0.00 0.00 0.00

## COVER

Total Living Cover

25.00 10.00 15.00 10.00 20.00 20.00 25.00 25.00

Litter

20.00 20.00 25.00 25.00 25.00 10.00 5.00 20.00

Bareground

50.00 65.00 55.00 60.00 50.00 65.00 65.00 50.00

Rock

5.00 5.00 5.00 5.00 5.00 5.00 5.00 5.00

## % COMPOSITION

Shrubs

0.00 0.00 33.33 0.00 0.00 0.00 0.00 0.00

Forbs

20.00 70.00 0.00 50.00 35.00 0.00 0.00 0.00

Grasses

80.00 30.00 66.67 50.00 65.00 100.00 100.00 100.00

UP&L-DES BEE DOVE  
TEST PLOT (1992)  
Subplots #3  
Acreage:  
Slope: 3-5 deg  
Exposure: SW  
Sample Date: 4 Sept 96

9.00	Mean	SDev	Freq	
7.00	1.33	2.54	22.22	SHRUBS <i>Ceratoides lanata</i>

0.00	2.67	3.06	44.44	FORBS <i>Halogeton glomeratus</i>
------	------	------	-------	--------------------------------------

0.00	7.00	5.46	77.78	GRASSES
23.00	8.11	9.35	55.56	<i>Elymus lanceolatus</i>
0.00	0.89	1.73	22.22	<i>Elymus smithii</i>
				<i>Stipa comata</i>

30.00	20.00	6.67	COVER
45.00	21.67	10.54	Total Living Cover
20.00	53.33	13.33	Litter
5.00	5.00	0.00	Bareground
			Rock

23.33	6.30	12.01	% COMPOSITION
0.00	19.44	24.99	Shrubs
76.67	74.26	22.89	Forbs
			Grasses

## UP&amp;L-DES BEE DOVE

## TEST PLOT (1992)

## Subplots #4

## Acreage:

Slope: 3-5 deg

1-3 = 4A

4-6 = 4B

7-9 = 4C

Exposure: SW

Sample Date: 4 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

## SHRUBS

Ceratoides lanata	0.00	5.00	0.00	0.00	0.00	0.00	0.00	5.00
Atriplex canescens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

## FORBS

## GRASSES

Agropyron cristatum	5.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Elymus smithii	10.00	5.00	0.00	10.00	5.00	10.00	20.00	20.00
Elymus lanceolatus	20.00	5.00	0.00	30.00	10.00	15.00	20.00	0.00

## COVER

Total Living Cover	35.00	15.00	10.00	40.00	15.00	25.00	40.00	25.00
Litter	35.00	15.00	25.00	10.00	55.00	45.00	25.00	25.00
Bareground	10.00	45.00	60.00	30.00	10.00	20.00	5.00	20.00
Rock	20.00	25.00	5.00	20.00	20.00	10.00	30.00	30.00

## % COMPOSITION

Shrubs	0.00	33.33	0.00	0.00	0.00	0.00	0.00	20.00
Forbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	100.00	66.67	100.00	100.00	100.00	100.00	100.00	80.00

UP&L-DES BEE DOVE  
 TEST PLOT (1992)  
 Subplots #4  
 Acreage:  
 Slope: 3-5 deg  
 Exposure: SW  
 Sample Date: 4 Sept 96

9.00	Mean	SDev	Freq	
5.00	1.67	2.36	33.33	SHRUBS
5.00	0.56	1.57	11.11	<i>Ceratoides lanata</i> <i>Atriplex canescens</i>

### FORBS

				GRASSES
0.00	1.67	3.33	22.22	<i>Agropyron cristatum</i>
25.00	11.67	7.82	88.89	<i>Elymus smithii</i>
0.00	11.11	10.21	66.67	<i>Elymus lanceolatus</i>

				COVER
35.00	26.67	10.80		Total Living Cover
25.00	28.89	13.29		Litter
15.00	23.89	17.12		Bareground
25.00	20.56	7.97		Rock

				% COMPOSITION
28.57	9.10	13.26		Shrubs
0.00	0.00	0.00		Forbs
71.43	90.90	13.26		Grasses

## UP&amp;L-DES BEE DOVE

## TEST PLOT (1992)

## Subplots #5

## Acreage:

Slope: 3-5 deg

1-3 = 5A

4-6 = 5B

7-9 = 5C

Exposure: SW

Sample Date: 4 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

**SHRUBS**

Ceratoides lanata	0.00	0.00	0.00	0.00	15.00	5.00	0.00	0.00
Atriplex canescens	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00

**FORBS****GRASSES**

Elymus spicatus	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	20.00	5.00	15.00	20.00	0.00	10.00	20.00	20.00
Elymus smithii	5.00	0.00	0.00	0.00	5.00	5.00	20.00	0.00
Elymus cinereus	10.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Stipa comata	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00

**COVER**

Total Living Cover	35.00	10.00	30.00	20.00	20.00	25.00	40.00	20.00
Litter	5.00	10.00	25.00	10.00	20.00	10.00	25.00	25.00
Bareground	10.00	10.00	10.00	45.00	20.00	40.00	10.00	10.00
Rock	50.00	70.00	35.00	25.00	40.00	25.00	25.00	45.00

**% COMPOSITION**

Shrubs	0.00	50.00	0.00	0.00	75.00	20.00	0.00	0.00
Forbs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	100.00	50.00	100.00	100.00	25.00	80.00	100.00	100.00

UP&L-DES BEE DOVE  
TEST PLOT (1992)  
Subplots #5  
Acreage:  
Slope: 3-5 deg  
Exposure: SW  
Sample Date: 4 Sept 96

9.00 Mean SDev Freq

0.00 2.22 4.78 22.22  
0.00 0.56 1.57 11.11

SHRUBS

*Ceratoides lanata*  
*Atriplex canescens*

FORBS

0.00 0.56 1.57 11.11  
10.00 13.33 7.07 88.89  
25.00 6.67 8.82 55.56  
0.00 2.22 4.16 22.22  
0.00 0.56 1.57 11.11

GRASSES

*Elymus spicatus*  
*Elymus lanceolatus*  
*Elymus smithii*  
*Elymus cinereus*  
*Stipa comata*

35.00 26.11 9.06  
35.00 18.33 9.43  
10.00 18.33 13.33  
20.00 37.22 15.11

COVER

Total Living Cover  
Litter  
Bareground  
Rock

0.00 16.11 26.22  
0.00 0.00 0.00  
100.00 83.89 26.22

% COMPOSITION

Shrubs  
Forbs  
Grasses

## UP&amp;L-DES BEE DOVE

## TEST PLOT (1992)

Subplots #6(8)

Acreage:

Slope: 3-5 deg

1-3 = 6(8)A

4-6 = 6(8)B

7-9 = 6(8)C

Exposure: SW

Sample Date: 4 Sept 96

1.00

2.00

3.00

4.00

5.00

6.00

7.00

8.00

## SHRUBS

*Ceratoides lanata*

0.00

10.00

0.00

0.00

0.00

0.00

0.00

0.00

## FORBS

*Halogeton glomeratus*

10.00

5.00

0.00

0.00

1.00

0.00

0.00

0.00

## GRASSES

*Elymus smithii*

0.00

0.00

5.00

10.00

4.00

25.00

25.00

0.00

*Elymus lanceolatus*

0.00

0.00

5.00

15.00

0.00

0.00

15.00

*Stipa comata*

0.00

0.00

5.00

0.00

0.00

0.00

0.00

## COVER

Total Living Cover

10.00

15.00

15.00

25.00

5.00

25.00

25.00

15.00

Litter

10.00

20.00

10.00

25.00

25.00

25.00

20.00

Bareground

75.00

60.00

70.00

45.00

65.00

45.00

50.00

Rock

5.00

5.00

5.00

5.00

5.00

5.00

5.00

## % COMPOSITION

Shrubs

0.00

66.67

0.00

0.00

0.00

0.00

0.00

Forbs

100.00

33.33

0.00

0.00

20.00

0.00

0.00

Grasses

0.00

0.00

100.00

100.00

80.00

100.00

100.00

UP&L-DES BEE DOVE  
TEST PLOT (1992)  
Subplots #6(8)  
Acreage:  
Slope: 3-5 deg  
Exposure: SW  
Sample Date: 4 Sept 96

9.00 Mean SDev Freq

0.00 1.11 3.14 11.11

SHRUBS  
*Ceratoides lanata*

0.00 1.78 3.29 33.33

FORBS  
*Halogeton glomeratus*

10.00 8.78 9.41 66.67  
15.00 5.56 6.85 44.44  
0.00 0.56 1.57 11.11

GRASSES  
*Elymus smithii*  
*Elymus lanceolatus*  
*Stipa comata*

25.00 17.78 7.11  
25.00 20.00 5.77  
45.00 57.22 10.83  
5.00 5.00 0.00

COVER  
Total Living Cover  
Litter  
Bareground  
Rock

0.00 7.41 20.95  
0.00 17.04 31.44  
100.00 75.56 40.86

% COMPOSITION  
Shrubs  
Forbs  
Grasses

## UP&amp;L-DES BEE DOVE

TEST PLOT (1992)

Subplots #7

Acreage:

Slope: 3-5 deg

1-3 = 7A

4-6 = 7B

7-9 = 7C

Exposure: SW

Sample Date: 4 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

## SHRUBS

## FORBS

Halogeton glomeratus	0.00	20.00	10.00	0.00	0.00	0.00	5.00	5.00
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## GRASSES

Agropyron cristatum	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
Stipa comata	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
Stipa hymenoides	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
Elymus lanceolatus	20.00	0.00	0.00	15.00	10.00	0.00	0.00	10.00

## COVER

Total Living Cover	20.00	20.00	10.00	20.00	10.00	10.00	15.00	15.00
Litter	70.00	65.00	25.00	10.00	25.00	25.00	20.00	26.00
Bareground	5.00	10.00	60.00	65.00	60.00	60.00	60.00	55.00
Rock	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.00

## % COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	0.00	100.00	100.00	0.00	0.00	0.00	33.33	33.33
Grasses	100.00	0.00	0.00	100.00	100.00	100.00	66.67	66.67

UP&L-DES BEE DOVE  
TEST PLOT (1992)  
Subplots #7  
Acreage:  
Slope: 3-5 deg  
Exposure: SW  
Sample Date: 4 Sept 96

9.00 Mean SDev Freq

-----  
**SHRUBS**

0.00 4.44 6.43 44.44

**FORBS**  
*Halogeton glomeratus*

0.00 0.56 1.57 11.11  
0.00 1.11 3.14 11.11  
0.00 1.11 3.14 11.11  
15.00 7.78 7.49 55.56

**GRASSES**  
*Agropyron cristatum*  
*Stipa comata*  
*Stipa hymenoides*  
*Elymus lanceolatus*

15.00 15.00 4.08  
20.00 31.78 19.69  
60.00 48.33 21.98  
5.00 4.89 0.31

**COVER**  
Total Living Cover  
Litter  
Bareground  
Rock

0.00 0.00 0.00  
0.00 29.63 39.89  
100.00 70.37 39.89

**% COMPOSITION**  
Shrubs  
Forbs  
Grasses

## UP&amp;L-DES BEE DOVE

## TEST PLOT (1992)

## Subplots #8

## Acreage:

Slope: 3-5 deg

1-3 = 8A

4-6 = 8B

7-9 = 8C

Exposure: SW

Sample Date: 4 Sept 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

## SHRUBS

*Ceratoides lanata*

0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

## FORBS

*Halogeton glomeratus*

0.00 0.00 5.00 0.00 0.00 5.00 10.00 5.00

## GRASSES

<i>Stipa hymenoides</i>	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
<i>Elymus lanceolatus</i>	10.00	5.00	0.00	10.00	5.00	5.00	0.00	10.00
<i>Elymus smithii</i>	0.00	0.00	0.00	10.00	0.00	5.00	5.00	10.00
<i>Agropyron cristatum</i>	0.00	5.00	15.00	15.00	5.00	0.00	0.00	0.00
<i>Stipa comata</i>	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

## COVER

Total Living Cover	25.00	10.00	20.00	35.00	20.00	15.00	15.00	25.00
Litter	25.00	25.00	20.00	25.00	55.00	20.00	10.00	25.00
Bareground	45.00	60.00	55.00	35.00	20.00	60.00	70.00	45.00
Rock	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

## % COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	0.00	0.00	25.00	0.00	0.00	33.33	66.67	20.00
Grasses	100.00	100.00	75.00	100.00	100.00	66.67	33.33	80.00

UP&L-DES BEE DOVE  
 TEST PLOT (1992)  
 Subplots #8  
 Acreage:  
 Slope: 3-5 deg  
 Exposure: SW  
 Sample Date: 4 Sept 96

9.00	Mean	SDev	Freq	
10.00	1.11	3.14	11.11	SHRUBS <i>Ceratoides lanata</i>

5.00	3.33	3.33	55.56	FORBS <i>Halogeton glomeratus</i>
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0.00	1.11	3.14	11.11	GRASSES
0.00	5.00	4.08	66.67	<i>Stipa hymenoides</i>
0.00	3.33	4.08	44.44	<i>Elymus lanceolatus</i>
0.00	4.44	5.98	44.44	<i>Elymus smithii</i>
0.00	1.67	4.71	11.11	<i>Agropyron cristatum</i>
				<i>Stipa comata</i>

15.00	20.00	7.07	COVER
25.00	25.56	11.41	Total Living Cover
55.00	49.44	14.23	Litter
5.00	5.00	0.00	Bareground
			Rock

66.67	7.41	20.95	% COMPOSITION
33.33	19.81	21.49	Shrubs
0.00	72.78	33.18	Forbs
			Grasses

*PHOTOGRAPHS*



Des Bee Dove - Beehive Yard Slope



Des Bee Dove - Beehive Road Berm



Des Bee Dove - Deseret Road Berm



Des Bee Dove - Portal Road Berm



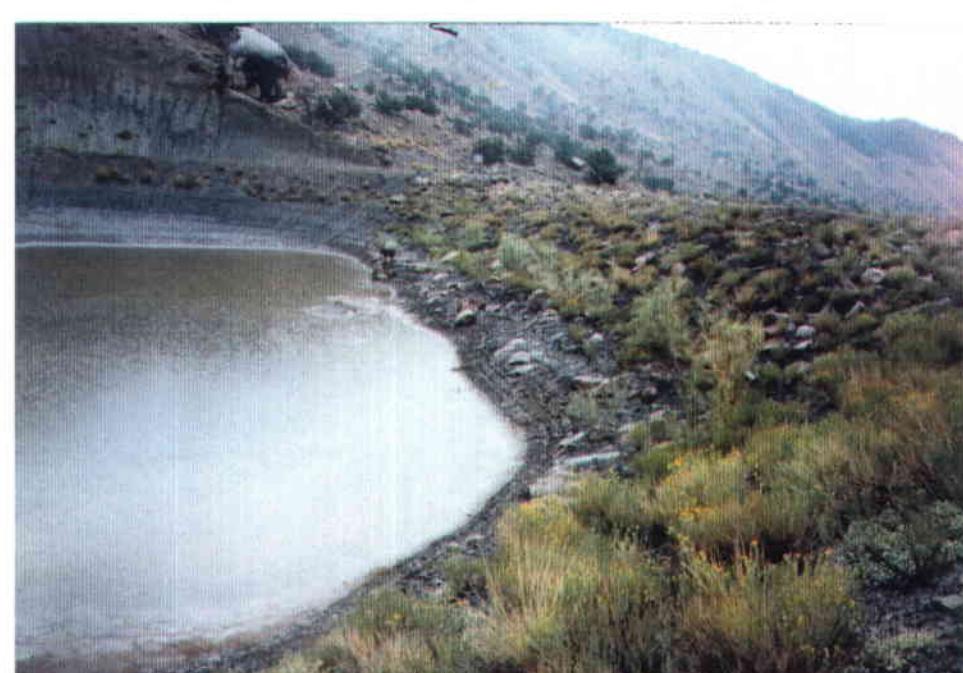
Des Bee Dove - Bathhouse Road Berm



Des Bee Dove - Tipple Slope



Des Bee Dove - Sediment Storage Slope



Des Bee Dove - Sediment Pond Banks



Des Bee Dove - Haul Road Bench



Des Bee Dove - Beehive Substation Slope



Des Bee Dove - Sediment Pond Area



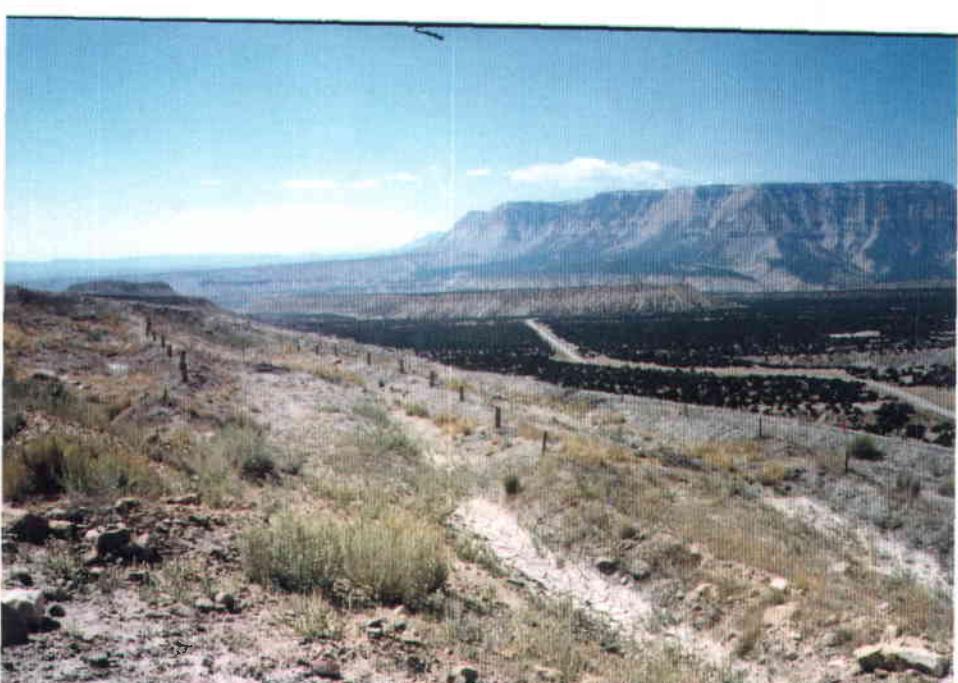
Des Bee Dove - Bathhouse Slope



Des Bee Dove - Material Yard Slope



Des Bee Dove - Test Plots '89



Des Bee Dove - Test Plots '92 (1 of 2)



Des Bee Dove - Test Plots '92 (2 of 2)

**DEER CREEK AREA**

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Riparian Areas

AREA: Deer Creek Mine Area

DATE: Aug. 26-30, 1996

WORKERS: P. Collins

SLOPE: 1 to 5 deg.

EXPOSURE: Variable

AREA: < .5 acre

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

*Mahonia repens*  
*Artemisia tridentata*  
*Clematis sp.*  
*Rosa woodsii*  
*Prunus virginiana*

*Bassia hyssopifolia*  
*Chenopodium fremontii*  
*Chrysanthemus nauseosus*  
*Grindelia squarrosa*  
*Medicago sativa*  
*Melilotus officinalis*  
*Circium sp.*

*Agropyron cristatum*  
*Elymus elongatus*  
*Elymus cinereus*  
*Stipa hymenoides*  
*Poa pratensis*

Page 2  
Riparian Area

- NOTES:
- 1) We sampled both riparian areas and combined data (n=10).
  - 2) The south area is across from the transfer site.
  - 3) The south riparian area is #'s 1-5, north is #'s 6-10 on the quant. data summary.
  - 4) Both areas were < 10% weeds this year.
  - 5) To locate, there is an opening just north of the riparian area on the west side of the road.

## UP&amp;L-DEER CREEK

## Riparian Areas

Acreage: &lt; .5 acre

Slope: 1-5 deg

Exposure: variable

Sample Date: 30 Aug 1996	South 1-5						North 6-10	
	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
<b>SHRUBS</b>								
Rosa woodsii	0.00	0.00	5.00	10.00	10.00	0.00	0.00	0.00
Chrysothamnus nauseosus	5.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Artemisia tridentata	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
Clematis ligusticifolia	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
Prunus virginiana	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
Mahonia repens	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
<b>FORBS</b>								
Grindelia squarrosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Aster chilensis	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
Melilotus officinalis	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Medicago sativa	0.00	5.00	0.00	5.00	0.00	10.00	0.00	0.00
<b>GRASSES</b>								
Elymus spicatus	15.00	20.00	0.00	0.00	0.00	10.00	0.00	0.00
Agropyron cristatum	10.00	10.00	15.00	30.00	0.00	0.00	0.00	40.00
Elymus elongatus	0.00	0.00	0.00	0.00	0.00	30.00	80.00	0.00
Poa pratensis	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Elymus hispidus	10.00	10.00	15.00	15.00	15.00	0.00	0.00	0.00
Elymus lanceolatus	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>COVER</b>								
Total Living Cover	50.00	55.00	65.00	60.00	50.00	50.00	80.00	50.00
Litter	20.00	25.00	20.00	15.00	40.00	10.00	10.00	30.00
Bareground	15.00	5.00	5.00	20.00	5.00	10.00	5.00	10.00
Rock	15.00	15.00	10.00	5.00	5.00	30.00	5.00	10.00
<b>% COMPOSITION</b>								
Shrubs	10.00	18.18	23.08	16.67	60.00	0.00	0.00	0.00
Forbs	0.00	9.09	15.38	8.33	10.00	20.00	0.00	20.00
Grasses	90.00	72.73	61.54	75.00	30.00	80.00	100.00	80.00

## UP&amp;L-DEER CREEK

Riparian Areas

Acreage: &lt; .5 acre

Slope: 1-5 deg

Exposure: variable

Sample Date: 30 Aug 1996

9.00 10.00 Mean SDev Freq

					SHRUBS
0.00	0.00	2.50	4.03	30.00	<i>Rosa woodsii</i>
0.00	0.00	1.50	3.20	20.00	<i>Chrysanthus nauseosus</i>
0.00	0.00	0.50	1.50	10.00	<i>Artemisia tridentata</i>
0.00	0.00	1.00	3.00	10.00	<i>Clematis ligusticifolia</i>
0.00	0.00	0.50	1.50	10.00	<i>Prunus virginiana</i>
0.00	0.00	1.00	3.00	10.00	<i>Mahonia repens</i>
					FORBS
0.00	0.00	1.00	3.00	10.00	<i>Grindelia squarrosa</i>
0.00	5.00	1.00	2.00	20.00	<i>Aster chilensis</i>
0.00	0.00	1.00	3.00	10.00	<i>Melilotus officinalis</i>
0.00	0.00	2.00	3.32	30.00	<i>Medicago sativa</i>

					GRASSES
0.00	5.00	5.00	7.07	40.00	<i>Elymus spicatus</i>
20.00	0.00	12.50	13.28	60.00	<i>Agropyron cristatum</i>
45.00	35.00	19.00	26.34	40.00	<i>Elymus elongatus</i>
0.00	0.00	1.00	3.00	10.00	<i>Poa pratensis</i>
0.00	0.00	6.50	6.73	50.00	<i>Elymus hispidus</i>
0.00	0.00	1.00	3.00	10.00	<i>Elymus lanceolatus</i>

					COVER
65.00	45.00	57.00	10.05		Total Living Cover
25.00	25.00	22.00	8.72		Litter
5.00	20.00	10.00	5.92		Bareground
5.00	10.00	11.00	7.35		Rock

					% COMPOSITION
0.00	0.00	12.79	17.90		Shrubs
0.00	11.11	9.39	7.28		Forbs
100.00	88.89	77.82	19.62		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Sediment Pond Dam

AREA: Deer Creek Mine Area

DATE: Aug. 26-30, 1996

WORKERS: P. Collins

SLOPE: 1 - 25 deg.

EXPOSURE: Variable

AREA: < 2 acres

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

*Chrysanthemus nauseosus*  
*Eriogonum corymbosum*

*Aster foliaceus*  
*Bassia hyssopifolia*  
*Grindelia squarrosa*  
*Kochia scoparia*  
*Medicago sativa*  
*Melilotus officinalis*  
*Penstemon palmeri*

*Elymus smithii*  
*Elymus cinereus*  
*Elymus lanceolatus*  
*Hordeum jubatum*  
*Stipa hymenoides*

- NOTES:
- 1) <10% weeds by cover in some areas while other patches were 100% (n=10).
  - 2) Pond has been disturbed by modifications to it. It does not appear to have been reseeded.
  - 3) We sampled in the area with and without redisturbance.

## UP&amp;L-DEER CREEK

Sediment Pond Dam

Acreage: &lt; 2 acre

Slope: 1-25 deg

Exposure: variable

Sample Date: 26-30 Aug 96	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
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**SHRUBS**

Eriogonum corymbosum	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00
Chrysothamnus nauseosus	0.00	0.00	0.00	0.00	10.00	0.00	10.00	0.00

**FORBS**

Penstemon palmeri	0.00	0.00	0.00	5.00	0.00	0.00	5.00	0.00
Aster chilensis	0.00	20.00	10.00	5.00	10.00	0.00	10.00	5.00
Kochia scoparia	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halogeton glomeratus	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grindelia squarrosa	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**GRASSES**

Elymus cinereus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus spicatus	0.00	0.00	0.00	0.00	0.00	15.00	0.00	10.00
Stipa hymenoides	0.00	0.00	10.00	0.00	5.00	0.00	10.00	0.00
Elymus lanceolatus	0.00	15.00	15.00	30.00	15.00	20.00	10.00	10.00

**COVER**

Total Living Cover	40.00	35.00	35.00	40.00	40.00	60.00	45.00	25.00
Litter	5.00	5.00	10.00	10.00	10.00	5.00	10.00	5.00
Bareground	45.00	40.00	25.00	10.00	15.00	5.00	30.00	60.00
Rock	10.00	20.00	30.00	40.00	35.00	30.00	15.00	10.00

**% COMPOSITION**

Shrubs	0.00	0.00	0.00	0.00	25.00	41.67	22.22	0.00
Forbs	100.00	57.14	28.57	25.00	25.00	0.00	33.33	20.00
Grasses	0.00	42.86	71.43	75.00	50.00	58.33	44.44	80.00

## UP&amp;L-DEER CREEK

Sediment Pond Dam

Acreage: &lt; 2 acre

Slope: 1-25 deg

Exposure: variable

Sample Date: 26-30 Aug 96

9.00	10.00	Mean	SDev	Freq	
0.00	0.00	2.50	7.50	10.00	SHRUBS
0.00	0.00	2.00	4.00	20.00	<i>Eriogonum corymbosum</i> <i>Chrysothamnus nauseosus</i>

## FORBS

0.00	0.00	1.00	2.00	20.00	<i>Penstemon palmeri</i>
5.00	0.00	6.50	5.94	70.00	<i>Aster chilensis</i>
0.00	40.00	6.00	12.81	20.00	<i>Kochia scoparia</i>
0.00	5.00	2.00	4.58	20.00	<i>Halogeton glomeratus</i>
0.00	5.00	1.00	2.00	20.00	<i>Grindelia squarrosa</i>

## GRASSES

15.00	0.00	1.50	4.50	10.00	<i>Elymus cinereus</i>
0.00	0.00	2.50	5.12	20.00	<i>Elymus spicatus</i>
0.00	0.00	2.50	4.03	30.00	<i>Stipa hymenoides</i>
5.00	0.00	12.00	8.72	80.00	<i>Elymus lanceolatus</i>

## COVER

25.00	50.00	39.50	10.11	Total Living Cover
5.00	5.00	7.00	2.45	Litter
20.00	35.00	28.50	16.13	Bareground
50.00	10.00	25.00	13.42	Rock

## % COMPOSITION

0.00	0.00	8.89	14.37	Shrubs
20.00	100.00	40.90	32.42	Forbs
80.00	0.00	50.21	28.35	Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Temp. Sediment Basin

AREA: Deer Creek Mine Area

DATE: Aug. 26-30, 1996

WORKERS: P. Collins

SLOPE: 1-2 deg.

EXPOSURE: Variable

AREA: < 1 acre.

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Cercocarpus ledifolius*

*Aster glaucodes*  
*Aster chilensis*  
*Astragalus cicer*  
*Grindelia squarrosa*  
*Kochia scoparia*  
*Medicago sativa*  
*Melilotus officinalis*  
*Penstemon palmeri*

*Agropyron cristatum*  
*Elymus cinereus*  
*Bromus tectorum*  
*Hordeum jubatum*  
*Stipa hymenoides*  
*Elymus spicatus*  
*Elymus smithii*  
*Elymus lanceolatus*

NOTES: 1) Good representation of desirable and less weedy spp.  
The site appears to be improving over time (n=10).

UP&L-DEER CREEK  
 Temp. Sediment Basin  
 Acreage: < 1 acre  
 Slope: 1-2 deg  
 Exposure: variable

Sample Date: 30 Aug 1996	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
<b>SHRUBS</b>								
Cercocarpus ledifolius	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
<b>FORBS</b>								
Astragalus cicer	0.00	0.00	0.00	2.00	0.00	5.00	0.00	0.00
Medicago sativa	5.00	5.00	0.00	18.00	0.00	0.00	0.00	0.00
Kochia scoparia	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00
Aster chilensis	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grindelia squarrosa	0.00	0.00	0.00	0.00	0.00	5.00	2.00	0.00
Penstemon palmeri	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
Melilotus officinalis	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>GRASSES</b>								
Bromus tectorum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
Hordeum jubatum	0.00	5.00	0.00	0.00	0.00	0.00	10.00	0.00
Stipa hymenoides	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
Elymus spicatus	25.00	20.00	0.00	0.00	0.00	0.00	5.00	0.00
Elymus cinereus	0.00	0.00	0.00	10.00	10.00	0.00	10.00	0.00
Elymus smithii	0.00	0.00	55.00	0.00	0.00	0.00	20.00	15.00
Elymus lanceolatus	0.00	20.00	0.00	0.00	25.00	15.00	0.00	35.00
Agropyron cristatum	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
<b>COVER</b>								
Total Living Cover	50.00	50.00	55.00	45.00	35.00	40.00	50.00	60.00
Litter	10.00	20.00	35.00	35.00	55.00	40.00	15.00	30.00
Bareground	15.00	10.00	5.00	10.00	5.00	10.00	25.00	5.00
Rock	25.00	20.00	5.00	10.00	5.00	10.00	10.00	5.00
<b>% COMPOSITION</b>								
Shrubs	0.00	0.00	0.00	11.11	0.00	0.00	0.00	0.00
Forbs	50.00	10.00	0.00	44.44	0.00	37.50	10.00	0.00
Grasses	50.00	90.00	100.00	44.44	100.00	62.50	90.00	100.00

UP&L-DEER CREEK  
 Temp. Sediment Basin  
 Acreage: < 1 acre  
 Slope: 1-2 deg  
 Exposure: variable  
 Sample Date: 30 Aug 1996

9.00	10.00	Mean	SDev	Freq
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0.00	0.00	0.50	1.50	10.00
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**SHRUBS**  
*Cercocarpus ledifolius*

0.00	0.00	0.70	1.55	20.00
0.00	0.00	2.80	5.44	30.00
0.00	0.00	0.30	0.90	10.00
0.00	0.00	1.50	4.50	10.00
0.00	0.00	0.70	1.55	20.00
5.00	0.00	1.00	2.00	20.00
0.00	0.00	0.50	1.50	10.00

**FORBS**  
*Astragalus cicer*  
*Medicago sativa*  
*Kochia scoparia*  
*Aster chilensis*  
*Grindelia squarrosa*  
*Penstemon palmeri*  
*Melilotus officinalis*

0.00	0.00	1.00	3.00	10.00
10.00	0.00	2.50	4.03	30.00
0.00	0.00	1.00	3.00	10.00
25.00	0.00	7.50	10.55	40.00
0.00	0.00	3.00	4.58	30.00
0.00	0.00	9.00	16.85	30.00
10.00	50.00	15.50	16.35	60.00
0.00	0.00	1.00	3.00	10.00

**GRASSES**  
*Bromus tectorum*  
*Hordeum jubatum*  
*Stipa hymenoides*  
*Elymus spicatus*  
*Elymus cinereus*  
*Elymus smithii*  
*Elymus lanceolatus*  
*Agropyron cristatum*

50.00	50.00	48.50	6.73
10.00	10.00	26.00	14.63
25.00	30.00	14.00	8.89
15.00	10.00	11.50	6.34

**COVER**  
 Total Living Cover  
 Litter  
 Bareground  
 Rock

0.00	0.00	1.11	3.33
10.00	0.00	16.19	18.87
90.00	100.00	82.69	20.73

**% COMPOSITION**  
 Shrubs  
 Forbs  
 Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Roadside Area

AREA: Deer Creek (1990 Reveg. Area)

DATE: Aug. 26-30, 1996

WORKERS: P. Collins

SLOPE: 5 deg.

EXPOSURE: NE

AREA: < 1 acre

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Aster chilensis*

*Grindelia squarrosa*

*Machaeranthera canescens*

*Melilotus officinalis*

*Salsola pestifer*

*Bromus japonicus*

*Bromus inermis*

*Bromus tectorum*

*Elymus spicatus*

*Elymus smithii*

*Elymus lanceolatus*

*Elymus cinereus*

*Hordeum jubatum*

*Stipa hymenoides*

NOTES: 1) Sampled west side of the road randomly (n=10).

2) Mostly desirable species again this year.

3) Site seemed to have improved this year when compared to 1992-1995.

## UP&amp;L-DEER CREEK

Roadside Area

1990 Reveg Area

Acreage: &lt; 1 acre

Slope: 5 deg

Exposure: NE

Sample Date: 30 Aug 1996

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

## SHRUBS

## FORBS

Grindelia squarrosa	5.00	5.00	5.00	5.00	2.00	8.00	0.00	5.00
Salsola pestifer	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00
Aster chilensis	0.00	5.00	25.00	0.00	3.00	0.00	0.00	5.00
Halogeton glomeratus	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00

## GRASSES

Bromus tectorum	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus spicatus	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	0.00	0.00	10.00	30.00	35.00	10.00	15.00	30.00
Stipa hymenoides	0.00	0.00	10.00	0.00	0.00	5.00	0.00	5.00
Hordeum jubatum	5.00	20.00	0.00	0.00	0.00	5.00	0.00	0.00
Elymus cinereus	25.00	5.00	0.00	5.00	10.00	10.00	10.00	5.00

## COVER

Total Living Cover	40.00	40.00	50.00	40.00	50.00	40.00	30.00	50.00
Litter	20.00	10.00	10.00	10.00	10.00	10.00	5.00	25.00
Bareground	10.00	15.00	25.00	35.00	15.00	15.00	10.00	5.00
Rock	30.00	35.00	15.00	15.00	25.00	35.00	55.00	20.00

## % COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	12.50	25.00	60.00	12.50	10.00	25.00	16.67	20.00
Grasses	87.50	75.00	40.00	87.50	90.00	75.00	83.33	80.00

## UP&amp;L-DEER CREEK

Roadside Area

1990 Reveg Area

Acreage: &lt; 1 acre

Slope: 5 deg

Exposure: NE

Sample Date: 30 Aug 1996

9.00 10.00 Mean SDev Freq

## SHRUBS

5.00	5.00	4.50	2.01	90.00
0.00	0.00	0.30	0.90	10.00
5.00	0.00	4.30	7.24	50.00
0.00	0.00	0.40	0.80	20.00

## FORBS

Grindelia squarrosa
Salsola pestifer
Aster chilensis
Halogeton glomeratus

0.00	0.00	0.50	1.50	10.00
0.00	0.00	0.50	1.50	10.00
20.00	20.00	17.00	11.66	80.00
0.00	0.00	2.00	3.32	30.00
15.00	0.00	4.50	6.87	40.00
5.00	0.00	7.50	6.80	80.00

## GRASSES

Bromus tectorum
Elymus spicatus
Elymus lanceolatus
Stipa hymenoides
Hordeum jubatum
Elymus cinereus

50.00	25.00	41.50	8.38
15.00	10.00	12.50	5.59
15.00	10.00	15.50	8.20
20.00	55.00	30.50	14.04

## COVER

Total Living Cover
Litter
Bareground
Rock

0.00	0.00	0.00	0.00
20.00	20.00	22.17	13.52
80.00	80.00	77.83	13.52

% COMPOSITION
Shrubs
Forbs
Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Gate Area Slope

AREA: Deer Creek (1990 Reveg. Area)

DATE: Aug. 26-30, 1996

WORKERS: P. Collins

SLOPE: 15 deg.

EXPOSURE: E

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Slight, but considering the angle of the slope, it's good.

COVER: (see quant. data)

DOMINANT PLANT SPECIES OBSERVED: (see also quant. data)

*Chrysanthemus nauseosus*

*Aster chilensis*  
*Astragalus cicer*  
*Kochia scoparia*  
*Medicago sativa*

*Agropyron cristatum*  
*Elymus lanceolatus*  
*Elymus spicatus*  
*Elymus cinereus*  
*Stipa hymenoides*

NOTES: 1) Again, mostly desirable species this year. The site has been improving from year to year (n=10).

## UP&amp;L-DEER CREEK

Gate Area Slope

1990 Reveg Area

Acreage:

Slope: 15 deg

Exposure: E

Sample Date: 26-30 Aug 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

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SHRUBS

Chrysothamnus nauseosus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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## FORBS

Grindelia squarrosa	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Astragalus cicer	0.00	0.00	0.00	5.00	10.00	5.00	20.00	0.00
Medicago sativa	10.00	0.00	10.00	0.00	0.00	0.00	0.00	5.00

## GRASSES

Elymus spicatus	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stipa hymenoides	0.00	0.00	10.00	0.00	25.00	0.00	0.00	5.00
Elymus lanceolatus	10.00	25.00	5.00	15.00	15.00	25.00	5.00	20.00
Elymus cinereus	10.00	0.00	0.00	40.00	0.00	5.00	0.00	15.00

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COVER

Total Living Cover	35.00	25.00	35.00	60.00	50.00	35.00	25.00	45.00
Litter	5.00	10.00	20.00	10.00	10.00	10.00	5.00	10.00
Bareground	45.00	50.00	15.00	15.00	30.00	40.00	25.00	30.00
Rock	15.00	15.00	30.00	15.00	10.00	15.00	45.00	15.00

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% COMPOSITION

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	28.57	0.00	57.14	8.33	20.00	14.29	80.00	11.11
Grasses	71.43	100.00	42.86	91.67	80.00	85.71	20.00	88.89

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## UP&amp;L-DEER CREEK

Gate Area Slope

1990 Reveg Area

Acreage:

Slope: 15 deg

Exposure: E

Sample Date: 26-30 Aug 96

9.00	10.00	Mean	SDev	Freq	
					SHRUBS
5.00	0.00	0.50	1.50	10.00	<i>Chrysothamnus nauseosus</i>
					FORBS
0.00	0.00	1.00	3.00	10.00	<i>Grindelia squarrosa</i>
0.00	0.00	4.00	6.24	40.00	<i>Astragalus cicer</i>
0.00	0.00	2.50	4.03	30.00	<i>Medicago sativa</i>
					GRASSES
0.00	0.00	0.50	1.50	10.00	<i>Elymus spicatus</i>
35.00	25.00	10.00	12.65	50.00	<i>Stipa hymenoides</i>
0.00	10.00	13.00	8.12	90.00	<i>Elymus lanceolatus</i>
0.00	0.00	7.00	12.08	40.00	<i>Elymus cinereus</i>
					COVER
40.00	35.00	38.50	10.26		Total Living Cover
15.00	5.00	10.00	4.47		Litter
25.00	50.00	32.50	12.50		Bareground
20.00	10.00	19.00	10.20		Rock
					% COMPOSITION
12.50	0.00	1.25	3.75		Shrubs
0.00	0.00	21.94	25.42		Forbs
87.50	100.00	76.81	24.61		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Fan Road Slopes

AREA: Deer Creek (1989 Reveg. Area)

DATE: Aug. 26-30, 1996

WORKERS: P. Collins, D. Collins

SLOPE: Variable

EXPOSURE: Variable

AREA: 1.1 acres

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

*Chrysanthemus nauseosus*

*Aster chilensis*

*Halogeton glomeratus*

*Melilotus officinalis*

*Salsola pestifer*

*Agropyron cristatum*

*Bromus tectorum*

*Elymus lanceolatus*

*Elymus smithii*

*Elymus spicatus*

*Elymus cinereus*

*Elymus salinus*

*Hordeum jubatum*

*Sitanion hystrrix*

*Stipa hymenoides*

NOTES: 1) Area and species diversity looked good. It was a dry summer year for precipitation (n=10).

2) No photo in 1996.

**UP&L-DEER CREEK**

Fan Road Slopes

1989 Reveg Area

Acreage: 1.1

Slope: variable

Exposure: variable

Sample Date: 26-30 Aug 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

**SHRUBS****FORBS**

Aster chilensis	25.00	25.00	35.00	45.00	50.00	70.00	0.00	0.00
Halogenetum glomeratus	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00

**GRASSES**

Hordeum jubatum	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
Agropyron cristatum	0.00	0.00	10.00	0.00	0.00	5.00	0.00	5.00
Elymus spicatus	25.00	40.00	15.00	10.00	0.00	0.00	0.00	30.00
Elymus cinereus	0.00	0.00	0.00	5.00	0.00	5.00	0.00	20.00
Elymus lanceolatus	0.00	10.00	0.00	5.00	20.00	0.00	0.00	10.00

**COVER**

Total Living Cover	50.00	75.00	60.00	65.00	75.00	80.00	25.00	65.00
Litter	10.00	5.00	20.00	5.00	5.00	5.00	5.00	10.00
Bareground	10.00	5.00	5.00	5.00	5.00	5.00	45.00	5.00
Rock	30.00	15.00	15.00	25.00	15.00	10.00	25.00	20.00

**% COMPOSITION**

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	50.00	33.33	58.33	69.23	66.67	87.50	100.00	0.00
Grasses	50.00	66.67	41.67	30.77	33.33	12.50	0.00	100.00

## UP&amp;L-DEER CREEK

Fan Road Slopes

1989 Reveg Area

Acreage: 1.1

Slope: variable

Exposure: variable

Sample Date: 26-30 Aug 96

9.00 10.00 Mean SDev Freq

## SHRUBS

50.00	35.00	33.50	20.98	80.00
0.00	15.00	4.00	8.31	20.00

## FORBS

*Aster chilensis*  
*Halogetum glomeratus*

0.00	0.00	0.50	1.50	10.00
0.00	0.00	2.00	3.32	30.00
0.00	0.00	12.00	14.18	50.00
0.00	0.00	3.00	6.00	30.00
0.00	0.00	4.50	6.50	40.00

## GRASSES

*Hordeum jubatum*  
*Agropyron cristatum*  
*Elymus spicatus*  
*Elymus cinereus*  
*Elymus lanceolatus*

50.00	50.00	59.50	15.56
5.00	10.00	8.00	4.58
5.00	20.00	11.00	12.21
40.00	20.00	21.50	8.38

## COVER

Total Living Cover  
Litter  
Bareground  
Rock

0.00	0.00	0.00	0.00
100.00	100.00	66.51	31.11
0.00	0.00	33.49	31.11

## % COMPOSITION

Shrubs  
Forbs  
Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Refuse Pile & Berm

AREA: Deer Creek (1988 Reveg. Area)

DATE: Aug. 26-30, 1996

WORKERS: P. Collins, K. Collins

SLOPE: 27 deg.

EXPOSURE: NE 300 deg.

AREA: 4.0 acres

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Chrysanthemus nauseosus*  
*Chrysanthemus viscidiflorus*  
*Eriogonum corymbosum*

*Aster chilensis*  
*Halogeton glomeratus*  
*Iva axillaris*  
*Kochia scoparia*  
*Machaeranthera canescens*  
*Medicago sativa*  
*Melilotus officinalis*  
*Penstemon palmeri*  
*Salsola pestifer*

*Agropyron cristatum*  
*Bromus inermis*  
*Elymus lanceolatus*  
*Elymus smithii*  
*Elymus spicatus*  
*Elymus cinereus*  
*Hordeum jubatum*  
*Stipa hymenoides*

Page 2  
Refuse Pile & Berm

- NOTES: 1) Like previous years, patchy areas of weeds and some of desirable species.
- 2) Sampled entire area by random methods, including berm (n=12).

## UP&amp;L-DEER CREEK

Refuse Pile &amp; Berm

1988 Reveg Area

Acreage: 4.0 acres

Slope: 27 deg

Exposure: NE (300 deg)

Sample Date: 26-30 Aug 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

## SHRUBS

Eriogonum corymbosum	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00
Chrysothamnus nauseosus	0.00	30.00	0.00	25.00	0.00	0.00	10.00	10.00

## FORBS

Aster chilensis	0.00	0.00	20.00	5.00	10.00	0.00	0.00	0.00
Kochia scoparia	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Penstemon palmeri	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00

## GRASSES

Elymus cinereus	0.00	0.00	0.00	0.00	0.00	0.00	30.00	10.00
Elymus spicatus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Agropyron cristatum	15.00	0.00	0.00	5.00	0.00	10.00	0.00	5.00
Hordeum jubatum	5.00	5.00	0.00	0.00	0.00	0.00	0.00	5.00
Elymus lanceolatus	0.00	0.00	15.00	5.00	35.00	5.00	0.00	5.00

## COVER

Total Living Cover	35.00	35.00	35.00	40.00	45.00	40.00	40.00	45.00
Litter	25.00	5.00	10.00	5.00	10.00	15.00	15.00	10.00
Bareground	20.00	15.00	5.00	10.00	10.00	15.00	15.00	10.00
Rock	20.00	45.00	50.00	45.00	35.00	30.00	30.00	35.00

## % COMPOSITION

Shrubs	0.00	85.71	0.00	62.50	0.00	62.50	25.00	22.22
Forbs	42.86	0.00	57.14	12.50	22.22	0.00	0.00	22.22
Grasses	57.14	14.29	42.86	25.00	77.78	37.50	75.00	55.56

UP&L-DEER CREEK  
 Refuse Pile & Berm  
 1988 Reveg Area  
 Acreage: 4.0 acres  
 Slope: 27 deg  
 Exposure: NE (300 deg)  
 Sample Date: 26-30 Aug 96

9.00	10.00	11.00	12.00	Mean	SDev	Freq	
<b>SHRUBS</b>							
20.00	0.00	25.00	15.00	7.08	10.30	33.33	<i>Eriogonum corymbosum</i>
10.00	5.00	5.00	0.00	7.92	9.67	58.33	<i>Chrysothamnus nauseosus</i>
<b>FORBS</b>							
0.00	0.00	0.00	0.00	2.92	5.94	25.00	<i>Aster chilensis</i>
0.00	0.00	0.00	0.00	1.25	4.15	8.33	<i>Kochia scoparia</i>
5.00	0.00	0.00	0.00	1.25	2.98	16.67	<i>Penstemon palmeri</i>
<b>GRASSES</b>							
0.00	0.00	5.00	0.00	3.75	8.45	25.00	<i>Elymus cinereus</i>
0.00	25.00	0.00	0.00	2.08	6.91	8.33	<i>Elymus spicatus</i>
0.00	5.00	0.00	0.00	3.33	4.71	41.67	<i>Agropyron cristatum</i>
0.00	5.00	0.00	0.00	1.67	2.36	33.33	<i>Hordeum jubatum</i>
0.00	0.00	5.00	0.00	5.83	9.75	50.00	<i>Elymus lanceolatus</i>
<b>COVER</b>							
35.00	40.00	40.00	15.00	37.08	7.49		Total Living Cover
5.00	10.00	10.00	15.00	11.25	5.45		Litter
10.00	10.00	10.00	15.00	12.08	3.80		Bareground
50.00	40.00	40.00	55.00	39.58	9.67		Rock
<b>% COMPOSITION</b>							
85.71	12.50	75.00	100.00	44.26	36.40		Shrubs
14.29	0.00	0.00	0.00	14.27	18.27		Forbs
0.00	87.50	25.00	0.00	41.47	28.50		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Rock Slide and Berm

AREA: Deer Creek

DATE: Aug. 26-30, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 53+ deg.

EXPOSURE: W

AREA: .5 acre

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: Cover was estimated by nonconventional methods because of steep and dangerous slopes (see quant. data).

DOMINANT PLANT SPECIES OBSERVED:

*Chrysanthemus nauseosus*  
*Eriogonum corymbosum*

*Aster chilensis*  
*Halogeton glomeratus*  
*Malcomia africana*

*Agropyron cristatum*  
*Elymus smithii*  
*Elymus lanceolatus*  
*Elymus cinereus*  
*Elymus spicatus*

- NOTES: 1) Methods: As mentioned above, for cover, (because of dangerously steep slopes) we had to make estimations by viewing from a distance
- 2) Samples 1-5 was on the berm, 6-10 were on the slide(n=10).

Page 2  
Rock Slide and Berm

- 3) The vegetative cover is sparse where erosion repair work has been implemented.
- 4) The steep slide area appears to have constant erosion problems.

**UP&L-DEER CREEK**

Rock Slide Berm

1988 Reveg Area

Acreage: .5 deg

Slope: 53+ deg

Exposure: W

Sample Date: 26-30 Aug 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

**SHRUBS**

Eriogonum corymbosum	15.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
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**FORBS**

Aster chilensis	0.00	10.00	5.00	0.00	5.00	5.00	5.00	5.00
Halogeton glomeratus	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00

**GRASSES**

Agropyron cristatum	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	0.00	5.00	5.00	5.00	0.00	0.00	0.00	0.00
Elymus spicatus	25.00	10.00	10.00	20.00	0.00	0.00	0.00	0.00
Elymus cinereus	5.00	0.00	20.00	10.00	0.00	0.00	0.00	0.00

**COVER**

Total Living Cover	45.00	35.00	40.00	35.00	10.00	10.00	5.00	5.00
Litter	10.00	10.00	10.00	10.00	5.00	5.00	5.00	5.00
Bareground	10.00	15.00	15.00	25.00	15.00	75.00	80.00	80.00
Rock	35.00	40.00	35.00	30.00	70.00	10.00	10.00	10.00

**% COMPOSITION**

Shrubs	33.33	0.00	0.00	0.00	0.00	50.00	0.00	0.00
Forbs	0.00	28.57	12.50	0.00	100.00	50.00	100.00	100.00
Grasses	66.67	71.43	87.50	100.00	0.00	0.00	0.00	0.00

## UP&amp;L-DEER CREEK

Rock Slide Berm

1988 Reveg Area

Acreage: .5 deg

Slope: 53+ deg

Exposure: W

Sample Date: 26-30 Aug 96

9.00 10.00 Mean SDev Freq

10.00 0.00 3.00 5.10 30.00

## SHRUBS

*Eriogonum corymbosum*5.00 5.00 4.50 2.69 80.00  
0.00 0.00 0.50 1.50 10.00

## FORBS

*Aster chilensis*  
*Halogeton glomeratus*0.00 0.00 1.00 3.00 10.00  
0.00 0.00 1.50 2.29 30.00  
0.00 0.00 6.50 8.96 40.00  
0.00 0.00 3.50 6.34 30.00

## GRASSES

*Agropyron cristatum*  
*Elymus lanceolatus*  
*Elymus spicatus*  
*Elymus cinereus*15.00 5.00 20.50 15.40  
5.00 5.00 7.00 2.45  
70.00 80.00 46.50 30.83  
10.00 10.00 26.00 18.95

## COVER

Total Living Cover  
Litter  
Bareground  
Rock66.67 0.00 15.00 24.09  
33.33 100.00 52.44 41.33  
0.00 0.00 32.56 40.74

## % COMPOSITION

Shrubs  
Forbs  
Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Water Plant Slope

AREA: Deer Creek (1988 Reveg. Area)

DATE: Aug. 26-30, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 38 deg.

EXPOSURE: NE, 320

ANIMAL USE/DISTURBANCE:

EROSION: Slight

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

*Artemisia tridentata*

*Chrysothamnus nauseosus*

*Eriogonum corymbosum*

*Aster chilensis*

*Halogeton glomeratus*

*Machaeranthera canescens*

*Medicago sativa*

*Melilotus officinalis*

*Penstemon palmeri*

*Agropyron cristatum*

*Elymus cinereus*

*Elymus lanceolatus*

*Elymus spicatus*

*Elymus hymenoides*

*Sitanion hystrrix*

*Stipa hymenoides*

NOTES:

- 1) As previous years, there was a lot of gravel on slopes.

Page 2  
Water Plant Slope

- 2) Methods: For cover we placed meter sq. quadrats at regular intervals over the area, all the way to the fan(n=10).
- 3) There were some isolated patches of areas dominated by weeds, but on the whole, the area looked good.

**UP&L-DEER CREEK**

Water Plant Slope

1988 Reveg Area

Acreage:

Slope: 38 deg

Exposure: NE (320 deg)

Sample Date: 26-30 Aug 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

**SHRUBS**

<i>Chrysothamnus nauseosus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
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**FORBS**

<i>Melilotus officinalis</i>	0.00	10.00	5.00	0.00	0.00	0.00	0.00	0.00
<i>Aster chilensis</i>	20.00	20.00	25.00	15.00	0.00	10.00	15.00	20.00
<i>Medicago sativa</i>	0.00	5.00	5.00	10.00	0.00	0.00	0.00	0.00
<i>Halogeton glomeratus</i>	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00

**GRASSES**

<i>Elymus cinereus</i>	25.00	0.00	0.00	5.00	15.00	10.00	0.00	25.00
<i>Stipa hymenoides</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus spicatus</i>	0.00	0.00	0.00	20.00	0.00	25.00	20.00	10.00
<i>Agropyron cristatum</i>	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
<i>Elymus lanceolatus</i>	5.00	0.00	0.00	0.00	0.00	0.00	10.00	10.00

**COVER**

Total Living Cover	50.00	40.00	35.00	50.00	35.00	50.00	45.00	75.00
Litter	10.00	10.00	5.00	15.00	15.00	10.00	10.00	10.00
Bareground	10.00	35.00	35.00	20.00	10.00	15.00	10.00	10.00
Rock	30.00	15.00	25.00	15.00	40.00	25.00	35.00	5.00

**% COMPOSITION**

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33
Forbs	40.00	87.50	100.00	50.00	57.14	20.00	33.33	26.67
Grasses	60.00	12.50	0.00	50.00	42.86	80.00	66.67	60.00

## UP&amp;L-DEER CREEK

Water Plant Slope

1988 Reveg Area

Acreage:

Slope: 38 deg

Exposure: NE (320 deg)

Sample Date: 26-30 Aug 96

9.00	10.00	Mean	SDev	Freq
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## SHRUBS

0.00	0.00	1.00	3.00	10.00	<i>Chrysothamnus nauseosus</i>
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## FORBS

0.00	0.00	1.50	3.20	20.00	<i>Melilotus officinalis</i>
0.00	5.00	13.00	8.43	80.00	<i>Aster chilensis</i>
0.00	0.00	2.00	3.32	30.00	<i>Medicago sativa</i>
0.00	0.00	2.00	6.00	10.00	<i>Halogeton glomeratus</i>

## GRASSES

70.00	10.00	16.00	20.10	70.00	<i>Elymus cinereus</i>
0.00	0.00	0.50	1.50	10.00	<i>Stipa hymenoides</i>
0.00	0.00	7.50	9.81	40.00	<i>Elymus spicatus</i>
0.00	0.00	0.50	1.50	10.00	<i>Agropyron cristatum</i>
5.00	35.00	6.50	10.26	50.00	<i>Elymus lanceolatus</i>

## COVER

75.00	50.00	50.50	13.50	Total Living Cover
15.00	25.00	12.50	5.12	Litter
5.00	10.00	16.00	10.20	Bareground
5.00	15.00	21.00	11.36	Rock

## % COMPOSITION

0.00	0.00	1.33	4.00	Shrubs
0.00	10.00	42.46	30.51	Forbs
100.00	90.00	56.20	30.08	Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Pipeline

AREA: Deer Creek (1986 Reveg. Area)

DATE: Aug. 26-30, 1996

WORKERS: P. Collins

SLOPE: 5 - 30 deg.

EXPOSURE: Variable

AREA: 3.5 acre

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

*Artemisia tridentata*  
*Chrysothamnus nauseosus*  
*Eriogonum corymbosum*  
*Gutierrezia sarothrae*  
*Juniperus osteosperma*  
*Pinus edulis*  
*Populus angustifolia*  
*Salix sp.*

*Artemisia dracunculus*  
*Aster chilensis*  
*Aster foliaceous*  
*Castilleja sp.*  
*Grindelia squarrosa*  
*Halogeton glomeratus*  
*Kochia scoparia*  
*Machaeranthera canescens*  
*Malcomia africana*  
*Medicago sativa*  
*Melilotus officinalis*  
*Penstemon palmeri*  
*Salsola pestifer*

Page 2  
Pipeline  
Deer Creek

*Elymus cinereus*  
*Bromus tectorum*  
*Elymus lanceolatus*  
*Elymus spicatus*  
*Agropyron cristatum*  
*Elymus hispidus*  
*Bromus tectorum*  
*Elymus cinereus*  
*Stipa hymenoides*  
*Hordeum jubatum*

- NOTES: 1) Like 1993, 1994, and 1995 the area looked good with less than 20% weed spp.
- 2) Methods: For cover we placed meter sq. quadrats at regular intervals over the length of the pipeline at approx. every .10 mile. (n=13).
- 3) We sampled to the top near the facilities area this year.

## UP&amp;L-DEER CREEK

Pipeline

1986 Reveg Site

Acreage: 3.5 acres

Slope: 5-30 deg

Exposure: variable

Sample Date: 26-30 Aug 96

1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00

**SHRUBS**

<i>Chrysothamnus nauseosus</i>	5.00	5.00	10.00	0.00	15.00	40.00	0.00	5.00
<i>Juniperus oystersperma</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00

**FORBS**

<i>Penstemon palmeri</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Salsola pestifer</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
<i>Aster chilensis</i>	0.00	0.00	10.00	0.00	0.00	0.00	25.00	5.00
<i>Castilleja</i> sp.	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00
<i>Grindelia squarrosa</i>	0.00	0.00	0.00	5.00	0.00	0.00	5.00	0.00
<i>Melilotus officinalis</i>	0.00	0.00	0.00	0.00	5.00	0.00	25.00	0.00
<i>Medicago sativa</i>	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00

**GRASSES**

<i>Elymus cinereus</i>	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00
<i>Hordeum jubatum</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus lanceolatus</i>	0.00	0.00	0.00	40.00	5.00	0.00	0.00	5.00
<i>Stipa hymenoides</i>	30.00	25.00	0.00	0.00	0.00	0.00	0.00	20.00
<i>Bromus tectorum</i>	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus smithii</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Elymus salinus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**COVER**

Total Living Cover	35.00	35.00	45.00	50.00	25.00	90.00	55.00	40.00
Litter	10.00	10.00	15.00	5.00	25.00	5.00	35.00	5.00
Bareground	15.00	30.00	5.00	10.00	25.00	2.00	5.00	5.00
Rock	40.00	25.00	35.00	35.00	25.00	3.00	5.00	50.00

**% COMPOSITION**

Shrubs	14.29	28.57	22.22	0.00	60.00	44.44	0.00	12.50
Forbs	0.00	0.00	66.67	20.00	20.00	0.00	100.00	25.00
Grasses	85.71	71.43	11.11	80.00	20.00	55.56	0.00	62.50

UP&L-DEER CREEK  
 Pipeline  
 1986 Reveg Site  
 Acreage: 3.5 acres  
 Slope: 5-30 deg  
 Exposure: variable  
 Sample Date: 26-30

9.00	10.00	11.00	12.00	13.00	Mean	SDev	Freq	
								SHRUBS
0.00	30.00	0.00	0.00	10.00	9.23	12.06	61.54	<i>Chrysothamnus nau</i>
0.00	0.00	0.00	0.00	0.00	0.38	1.33	7.69	<i>Juniperus ostersper</i>
								FORBS
0.00	5.00	0.00	0.00	0.00	0.38	1.33	7.69	<i>Penstemon palmeri</i>
0.00	0.00	0.00	0.00	0.00	0.38	1.33	7.69	<i>Salsola pestifer</i>
0.00	0.00	5.00	35.00	25.00	8.08	11.69	46.15	<i>Aster chilensis</i>
0.00	0.00	0.00	0.00	0.00	1.54	5.33	7.69	<i>Castilleja sp.</i>
0.00	0.00	0.00	0.00	0.00	0.77	1.80	15.38	<i>Grindelia squarrosa</i>
0.00	0.00	0.00	0.00	0.00	2.31	6.68	15.38	<i>Melilotus officinalis</i>
0.00	0.00	0.00	0.00	0.00	0.38	1.33	7.69	<i>Medicago sativa</i>
								GRASSES
5.00	0.00	0.00	0.00	0.00	4.23	13.28	15.38	<i>Elymus cinereus</i>
0.00	0.00	0.00	5.00	0.00	0.38	1.33	7.69	<i>Hordeum jubatum</i>
5.00	5.00	30.00	5.00	10.00	8.08	12.02	61.54	<i>Elymus lanceolatus</i>
0.00	0.00	0.00	0.00	0.00	5.77	10.71	23.08	<i>Stipa hymenoides</i>
0.00	0.00	0.00	0.00	0.00	0.38	1.33	7.69	<i>Bromus tectorum</i>
30.00	5.00	0.00	0.00	5.00	3.08	7.98	23.08	<i>Elymus smithii</i>
0.00	5.00	0.00	0.00	0.00	0.38	1.33	7.69	<i>Elymus salinus</i>
								COVER
40.00	50.00	35.00	45.00	50.00	45.77	15.04		Total Living Cover
10.00	10.00	10.00	10.00	15.00	12.69	8.23		Litter
5.00	5.00	15.00	20.00	25.00	12.85	9.13		Bareground
45.00	35.00	40.00	25.00	10.00	28.69	14.43		Rock
								% COMPOSITION
0.00	60.00	0.00	0.00	20.00	20.16	21.42		Shrubs
0.00	10.00	14.29	77.78	50.00	29.52	32.10		Forbs
100.00	30.00	85.71	22.22	30.00	50.33	31.72		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Deer Canyon

AREA: Deer Creek (1986 Reveg. Area)

DATE: Aug. 26-30, 1996

WORKERS: P. Collins

SLOPE: 15-20 deg.

EXPOSURE: E

AREA: .1 acre

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED:

*Chrysothamnus nauseosus*  
*Cercocarpus ledifolius*

*Aster chilensis*  
*Machaeranthera canescens*  
*Medicago sativa*  
*Melilotus officinalis*  
*Penstemon palmeri*

*Agropyron cristatum*  
*Dactylis glomeratus*  
*Elymus cinereus*  
*Elymus spicatus*  
*Elymus lanceolatus*  
*Elymus cinereus*  
*Elymus smithii*  
*Poa pratensis*  
*Stipa hymenoides*

NOTES: 1) Area continues to look very good.

2) Sampled randomly (n=6).

## UP&amp;L-DEER CREEK

Deer Canyon

1986 Reveg Area

Acreage: .1

Slope: 15-20 deg

Exposure: E

Sample Date: 26-30 Aug 96

1.00 2.00 3.00 4.00 5.00 6.00 Mean SDev

## SHRUBS

<i>Chrysothamnus nauseosus</i>	5.00	0.00	0.00	15.00	5.00	20.00	7.50	7.50
<i>Cercocarpus ledifolius</i>	0.00	0.00	0.00	0.00	0.00	5.00	0.83	1.86

## FORBS

<i>Aster chilensis</i>	9.00	0.00	10.00	15.00	15.00	10.00	9.83	5.01
<i>Machaeranthera canescens</i>	0.00	0.00	0.00	5.00	5.00	5.00	2.50	2.50
<i>Penstemon palmeri</i>	1.00	0.00	0.00	0.00	0.00	0.00	0.17	0.37
<i>Medicago sativa</i>	0.00	5.00	0.00	0.00	0.00	0.00	0.83	1.86

## GRASSES

<i>Elymus spicatus</i>	0.00	0.00	0.00	0.00	0.00	10.00	1.67	3.73
<i>Dactylis glomeratus</i>	5.00	0.00	0.00	0.00	0.00	0.00	0.83	1.86
<i>Elymus cinereus</i>	0.00	5.00	10.00	15.00	0.00	0.00	5.00	5.77
<i>Elymus smithii</i>	0.00	5.00	0.00	5.00	0.00	0.00	1.67	2.36
<i>Elymus lanceolatus</i>	10.00	35.00	40.00	15.00	20.00	15.00	22.50	11.09
<i>Agropyron cristatum</i>	0.00	0.00	0.00	0.00	5.00	0.00	0.83	1.86
<i>Poa pratensis</i>	10.00	0.00	0.00	0.00	0.00	0.00	1.67	3.73

## COVER

Total Living Cover	40.00	50.00	60.00	70.00	50.00	65.00	55.83	10.17
Litter	10.00	10.00	25.00	10.00	25.00	25.00	17.50	7.50
Bareground	25.00	15.00	10.00	10.00	5.00	5.00	11.67	6.87
Rock	25.00	25.00	5.00	10.00	20.00	5.00	15.00	8.66

## % COMPOSITION

Shrubs	12.50	0.00	0.00	21.43	10.00	38.46	13.73	13.31
Forbs	25.00	10.00	16.67	28.57	40.00	23.08	23.89	9.38
Grasses	62.50	90.00	83.33	50.00	50.00	38.46	62.38	18.62

UP&L-DEER CREEK

Deer Canyon

1986 Reveg Area

Acreage: .1

Slope: 15-20 deg

Exposure: E

Freq      Sample Date: 26-30 Aug 96

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SHRUBS

66.67      *Chrysothamnus nauseosus*  
16.67      *Cercocarpus ledifolius*

FORBS

83.33      *Aster chilensis*  
50.00      *Machaeranthera canescens*  
16.67      *Penstemon palmeri*  
16.67      *Medicago sativa*

GRASSES

16.67      *Elymus spicatus*  
16.67      *Dactylis glomeratus*  
66.67      *Elymus cinereus*  
33.33      *Elymus smithii*  
100.00      *Elymus lanceolatus*  
16.67      *Agropyron cristatum*  
16.67      *Poa pratensis*

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COVER

Total Living Cover

Litter

Bareground

Rock

---

% COMPOSITION

Shrubs

Forbs

Grasses

---

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Access Road Slopes

AREA: Deer Creek Waste Rock Site (1989 Interim Reveg. Area)

DATE: Aug. 26-30, 1996

WORKERS: P. Collins

SLOPE: 20 - 25 deg.

EXPOSURE: Variable

AREA: Part of 5 acres

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible, looks better this year

COVER: (see qualitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also qualitative data)

*Atriplex canescens*

*Atriplex gardneri*

*Ceratoides lanata*

*Chrysothamnus nauseosus*

*Eriogonum corymbosum*

*Sarcobatus vermiculatus*

*Halogeton glomeratus*

*Iva axillaris*

*Kochia scoparia*

*Machaeranthera canescens*

*Medicago sativa*

*Elymus lanceolatus*

*Elymus cinereus*

*Sitanion hystrix*

*Stipa hymenoides*

NOTES: 1) Method: Regularly sampled at 100' intervals

Page 2  
Access Road Slopes

alternating from cut to fill slopes (raw data sheets indicate which are cut and which area fill slopes). (n=12)

- 2) On the cut side, mostly weedy spp. dominated.
- 3) The fill slopes looked much better than the cut slopes (from a vegetation stand point). Or, the fill slopes looked "good", whereas, the cut slope looked "poor".
- 4) A separate report about this area when compared to the Reference Area was written and submitted to PacifiCorp.

**DEER CREEK-WASTE ROCK SITE**

Access Road Slope

1989 Interim Reveg Area

Acreage: part of 5 acres

Slope: 20-25 deg

Exposure: variable

Sample Date: 29 Aug 1996

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
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**SHRUBS**

Chrysothamnus nauseosus	10.00	0.00	35.00	0.00	0.00	0.00	0.00	0.00
Ceratoides lanata	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
Atriplex canescens	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
Atriplex gardneri	0.00	0.00	7.00	0.00	55.00	4.00	0.00	0.00

**FORBS**

Kochia scoparia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Salsola pestifer	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
Halogeton glomeratus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00

**GRASSES**

Stipa hymenoides	0.00	5.00	0.00	0.00	0.00	1.00	0.00	0.00
Elymus cinereus	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus spicatus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus lanceolatus	15.00	0.00	0.00	0.00	15.00	0.00	20.00	0.00
Elymus smithii	0.00	10.00	0.00	0.00	0.00	0.00	10.00	0.00

**COVER**

Total Living Cover	35.00	15.00	45.00	5.00	70.00	5.00	40.00	5.00
Litter	10.00	5.00	10.00	3.00	5.00	4.00	5.00	3.00
Bareground	30.00	75.00	25.00	90.00	20.00	90.00	25.00	90.00
Rock	25.00	5.00	20.00	2.00	5.00	1.00	30.00	2.00

**% COMPOSITION**

Shrubs	28.57	0.00	100.00	0.00	78.57	80.00	25.00	0.00
Forbs	0.00	0.00	0.00	100.00	0.00	0.00	0.00	100.00
Grasses	71.43	100.00	0.00	0.00	21.43	20.00	75.00	0.00

DEER CREEK-WASTE ROCK  
 Access Road Slope  
 1989 Interim Reveg Area  
 Acreage: part of 5 acres  
 Slope: 20-25 deg  
 Exposure: variable  
 Sample Date: 29 Aug 1996

9.00	10.00	11.00	12.00	Mean	SDev	Freq	
<b>SHRUBS</b>							
0.00	0.00	10.00	0.00	4.58	9.89	25.00	<i>Chrysothamnus nauseosus</i>
0.00	0.00	0.00	0.00	0.25	0.83	8.33	<i>Ceratoides lanata</i>
20.00	0.00	10.00	0.00	3.33	6.24	25.00	<i>Atriplex canescens</i>
0.00	0.00	0.00	0.00	5.50	15.07	25.00	<i>Atriplex gardneri</i>
<b>FORBS</b>							
0.00	0.00	0.00	5.00	0.42	1.38	8.33	<i>Kochia scoparia</i>
0.00	7.00	0.00	10.00	1.83	3.34	25.00	<i>Salsola pestifer</i>
0.00	0.00	0.00	0.00	0.42	1.38	8.33	<i>Halogeton glomeratus</i>
<b>GRASSES</b>							
0.00	0.00	0.00	0.00	0.50	1.38	16.67	<i>Stipa hymenoides</i>
0.00	0.00	5.00	0.00	1.25	2.98	16.67	<i>Elymus cinereus</i>
5.00	0.00	0.00	0.00	0.42	1.38	8.33	<i>Elymus spicatus</i>
25.00	0.00	0.00	0.00	6.25	9.16	33.33	<i>Elymus lanceolatus</i>
0.00	0.00	0.00	0.00	1.67	3.73	16.67	<i>Elymus smithii</i>
<b>COVER</b>							
50.00	7.00	25.00	15.00	26.42	20.56		Total Living Cover
10.00	3.00	5.00	5.00	5.67	2.62		Litter
25.00	85.00	60.00	75.00	57.50	28.69		Bareground
15.00	5.00	10.00	5.00	10.42	9.38		Rock
<b>% COMPOSITION</b>							
40.00	0.00	80.00	0.00	36.01	37.03		Shrubs
0.00	100.00	0.00	100.00	33.33	47.14		Forbs
60.00	0.00	20.00	0.00	30.65	34.53		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Phase I Berm

AREA: Deer Creek Waste Rock Site (1989 Final Reveg. Area)

DATE: Aug. 29, 1996

WORKERS: P. Collins

SLOPE: 0 - 20 deg.

EXPOSURE: Variable

AREA: 4 acres

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

*Atriplex gardneri*  
*Atriplex canescens*  
*Chrysothamnus nauseosus*

*Machaeranthera canescens*  
*Halogeton glomeratus*  
*Kochia scoparia*  
*Malcomia africana*  
*Medicago sativa*  
*Salsola pestifer*

*Agropyron cristatum*  
*Elymus lanceolatus*  
*Sitanion hystrrix*  
*Stipa hymenoides*

- NOTES: 1) Dominated mostly by weedy species, but more desirable spp. seemed to becoming established.
- 2) Methods: Sampled regularly every 50' (n=15). Sampled on top, inside and outside of berm about 5 times each.

**UP&L-DEER CREEK**

Phase I Berm

Waste Rock Site

1989 Final Reveg

Acreage: 4 acres

Slope: 0-20 deg

Exposure: variable

Sample Date: 29 Aug 1996

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
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**SHRUBS**

Chrysothamnus nauseosus	0.00	0.00	5.00	5.00	0.00	10.00	5.00	5.00
Atriplex gardneri	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
Atriplex canescens	0.00	0.00	5.00	0.00	5.00	0.00	0.00	0.00

**FORBS**

Malcomia africana	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
Salsola pestifer	0.00	0.00	0.00	5.00	0.00	0.00	10.00	0.00
Halogeton glomeratus	0.00	20.00	15.00	0.00	10.00	0.00	5.00	20.00
Kochia scoparia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Machaeranthera grindelioide	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**GRASSES**

Stipa hymenoides	5.00	0.00	0.00	0.00	0.00	5.00	5.00	5.00
Elymus lanceolatus	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00

**COVER**

Total Living Cover	10.00	20.00	25.00	10.00	25.00	35.00	25.00	30.00
Litter	5.00	5.00	5.00	10.00	5.00	15.00	5.00	5.00
Bareground	80.00	70.00	65.00	60.00	60.00	45.00	65.00	60.00
Rock	5.00	5.00	5.00	20.00	10.00	5.00	5.00	5.00

**% COMPOSITION**

Shrubs	0.00	0.00	40.00	50.00	40.00	28.57	20.00	16.67
Forbs	50.00	100.00	60.00	50.00	40.00	57.14	60.00	66.67
Grasses	50.00	0.00	0.00	0.00	20.00	14.29	20.00	16.67

9.00	10.00	11.00	12.00	13.00	14.00	15.00	Mean	SDev	Freq
5.00	5.00	0.00	0.00	0.00	0.00	0.00	2.67	3.09	46.67
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25	6.67
0.00	0.00	5.00	0.00	0.00	0.00	0.00	1.00	2.00	20.00
<hr/>									
0.00	0.00	0.00	0.00	0.00	5.00	0.00	1.67	5.06	13.33
0.00	15.00	0.00	0.00	5.00	0.00	0.00	2.33	4.42	26.67
0.00	0.00	10.00	25.00	5.00	5.00	5.00	8.00	8.12	66.67
0.00	0.00	0.00	0.00	15.00	0.00	0.00	1.00	3.74	6.67
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.25	6.67
<hr/>									
0.00	0.00	0.00	0.00	0.00	5.00	5.00	2.00	2.45	40.00
0.00	5.00	5.00	0.00	0.00	5.00	0.00	1.33	2.21	33.33
<hr/>									
5.00	25.00	20.00	25.00	25.00	20.00	10.00	20.67	8.14	
5.00	5.00	4.00	5.00	15.00	8.00	5.00	6.80	3.53	
85.00	65.00	75.00	65.00	55.00	70.00	80.00	66.67	10.11	
5.00	5.00	1.00	5.00	5.00	2.00	5.00	5.87	4.19	
<hr/>									
100.00	20.00	25.00	0.00	0.00	0.00	0.00	22.68	26.46	
0.00	60.00	50.00	100.00	100.00	50.00	50.00	59.59	24.97	
0.00	20.00	25.00	0.00	0.00	50.00	50.00	17.73	18.42	

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Phase I Diversion

AREA: Deer Creek Waste Rock Site (1989 Final Reveg. Area)

DATE: Aug. 29, 1996

WORKERS: P. Collins

SLOPE: 5 deg.

EXPOSURE: Variable

AREA: Part of 5 acres

ANIMAL USE/DISTURBANCE: Negligible

EROSION: Negligible

COVER: (see qualitative data)

DOMINANT PLANT SPECIES OBSERVED: (see quantitative data)

*Atriplex gardneri*  
*Atriplex canescens*  
*Atriplex confertifolia*  
*Artemisia tridentata*  
*Sarcobatus vermiculatus*

*Malcomia africana*  
*Sphaeralcea grossulariifolia*  
*Halogeton glomeratus*

*Sporobolus airoides*  
*Bromus tectorum*  
*Sitanion hystrrix*  
*Elymus lanceolatus*  
*Elymus spicatus*  
*Elymus cinereus*  
*Stipa hymenoides*

- NOTES:
- 1) Methods: Cover - Regular placement every 50' (n=10)
  - 2) Good establishment of native spp.
  - 3) A wash-out occurred this year that took out some of the vegetation. It had later been repaired.
  - 4) Repaired area looks good this year.

**UP&L-DEER CREEK**

Phase I Diversion

Waste Rock Site

1989 Final Reveg

Acreage: Part of 5 acres

Slope: 5 deg

Exposure: variable

Sample Date: 29 Aug 1996

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
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**SHRUBS**

Atriplex canescens	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
ATCO	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
Atriplex gardneri	5.00	0.00	5.00	5.00	0.00	5.00	10.00	0.00
Sarcobatus vermiculatus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**FORBS**

Machaeranthera canescens	0.00	5.00	0.00	5.00	0.00	0.00	0.00	0.00
Halogenon glomeratus	0.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00
Salsola pestifer	0.00	5.00	0.00	0.00	0.00	0.00	0.00	35.00

**GRASSES**

Elymus spicatus	0.00	10.00	0.00	0.00	0.00	5.00	0.00	0.00
Elymus salinus	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus cinereus	10.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
Elymus lanceolatus	0.00	0.00	0.00	10.00	15.00	10.00	10.00	0.00
Stipa hymenoides	0.00	5.00	0.00	0.00	10.00	0.00	0.00	0.00

**COVER**

Total Living Cover	55.00	25.00	35.00	25.00	25.00	25.00	30.00	35.00
Litter	10.00	10.00	5.00	5.00	5.00	5.00	10.00	5.00
Bareground	30.00	55.00	50.00	45.00	40.00	65.00	50.00	55.00
Rock	5.00	10.00	10.00	25.00	30.00	5.00	10.00	5.00

**% COMPOSITION**

Shrubs	9.09	0.00	14.29	40.00	0.00	40.00	33.33	0.00
Forbs	0.00	40.00	85.71	20.00	0.00	0.00	0.00	100.00
Grasses	90.91	60.00	0.00	40.00	100.00	60.00	66.67	0.00

UP&L-DEER CREEK  
 Phase I Diversion  
 Waste Rock Site  
 1989 Final Reveg  
 Acreage: Part of 5 acres  
 Slope: 5 deg  
 Exposure: variable  
 Sample Date: 29 Aug 1996

9.00	10.00	Mean	SDev	Freq	
					<b>SHRUBS</b>
0.00	0.00	0.50	1.50	10.00	<i>Atriplex canescens</i>
0.00	0.00	0.50	1.50	10.00	<i>ATCO</i>
0.00	0.00	3.00	3.32	50.00	<i>Atriplex gardneri</i>
25.00	0.00	2.50	7.50	10.00	<i>Sarcobatus vermiculatus</i>
					<b>FORBS</b>
0.00	0.00	1.00	2.00	20.00	<i>Machaeranthera canescens</i>
0.00	0.00	3.00	9.00	10.00	<i>Halogenon glomeratus</i>
0.00	0.00	4.00	10.44	10.00	<i>Salsola pestifer</i>
					<b>GRASSES</b>
0.00	0.00	1.50	3.20	20.00	<i>Elymus spicatus</i>
0.00	0.00	4.00	12.00	10.00	<i>Elymus salinus</i>
0.00	0.00	2.00	4.00	20.00	<i>Elymus cinereus</i>
0.00	35.00	8.00	10.54	50.00	<i>Elymus lanceolatus</i>
0.00	0.00	1.50	3.20	20.00	<i>Stipa hymenoides</i>
					<b>COVER</b>
25.00	35.00	31.50	8.96		Total Living Cover
8.00	4.00	6.70	2.37		Litter
65.00	60.00	51.50	10.50		Bareground
2.00	1.00	10.30	9.19		Rock
					<b>% COMPOSITION</b>
100.00	0.00	23.67	29.99		Shrubs
0.00	0.00	24.57	36.48		Forbs
0.00	100.00	51.76	38.37		Grasses

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Rilda Canyon

AREA: Deer Creek Mine

DATE: Sept. 12, 1996

WORKERS: P. Collins, D. Collins

SLOPE/EXPOSURE: Steep Slope - 47 deg./SE  
Road cuts - 28 deg./E  
Topsoil - 30 deg./E

ANIMAL USE/DISTURBANCE: Slight

EROSION: None observed

COVER: Approx. 15%-20%

DOMINANT PLANT SPECIES OBSERVED:

*Chrysothamnus nauseosus*

*Circium sp.*

*Melilotus officinalis*

*Cynoglossum officinale*

*Stipa hymenoides*

*Hordeum jubatum*

*Poa pratensis*

*Elymus smithii*

*Elymus spicatus*

- NOTES: 1) Qualitative sampling only  
2) Vegetation establishment was off to a good start.  
3) Erosion control mat covered well, but the topsoil pile had some tearing. It was difficult to see some of the plant seedlings.  
4) Due to young age and mat, it was difficult to identify some of the plant species.

- 5) Grasses dominated the road cuts, forbs the topsoil pile.
- 6) Divided study into: 1) steep cut, 2) road cuts, 3) topsoil pile.
- 7) Topsoil and road cut looked good. Steep slope were poor with veg. cover.
- 8) However, quaking aspen root starts (tillers) were coming thru on the steep slope.
- 9) Probably seeded in the Fall of 1995

*PHOTOGRAPHS*



Deer Creek Mine - Riparian Areas (North)



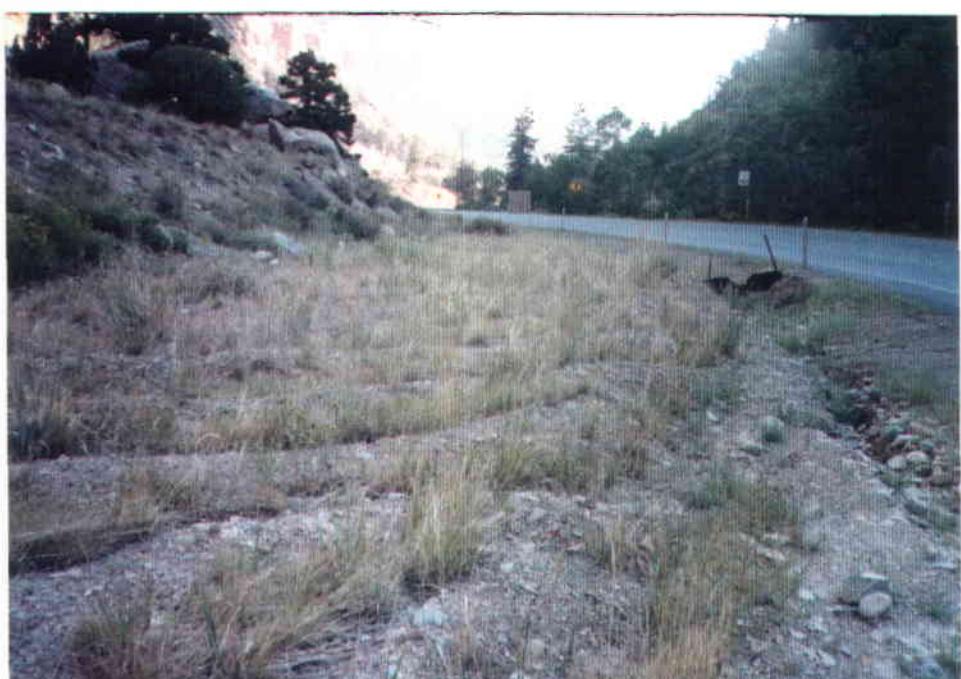
Deer Creek Mine - Riparian Areas (South)



Deer Creek Mine - Sediment Pond Dam



Deer Creek Mine - Temp. Sediment Basin



Deer Creek Mine - Roadside Areas



Deer Creek Mine - Gate Areas Slope



Deer Creek Mine - Refuse Pile and Berm



Deer Creek Mine - Rock Slide and Berm



Deer Creek Mine - Water Plant Slope (1 of 2)



Deer Creek Mine - Water Plant Slope (2 of 2)



Deer Creek Mine - Pipeline



Deer Creek Mine - Deer Canyon



Deer Creek Mine - Waste Rock Access Road Slopes



Deer Creek Mine - Phase I Berm



Deer Creek Mine - Phase I Diversion



Rilda Facilities Area – Road Cuts



Rilda Facilities Area – Portal



Rilda Facilities Area – Topsoil Pile



Rilda Facilities Area – "Steep" Road Cuts

## **TRAIL MOUNTAIN MINE AREA**

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Sediment Pond Out slopes

AREA: Trail Mtn. Mine/Cottonwood Fan Portal Area

DATE: Sept 9, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 25 deg.

EXPOSURE: E & S

ANIMAL USE/DISTURBANCE:

EROSION: Negligible

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

*Aster foliaceus*  
*Astragalus cicer*  
*Halogeton glomeratus*

*Agropyron cristatum*  
*Bromus inermis*  
*Elymus cinereus*  
*Poa pratensis*  
*Sitanion hystrrix*

- NOTES:
- 1) As before, we sampled over entire out slopes ( $n=10$ ), east and south exposures (on outside of fence).
  - 2) Cover was variable by species. Some areas were mostly grasses, others were forbs.
  - 3) Like last year, the north end was mostly weedy species.
  - 4) Crested wheatgrass was the dominant grass by far.
  - 5) Aster was the most common forb.

UP&L-TRAIL MOUNTAIN MINE SITE  
COTTONWOOD FAN PORTAL AREA

Sediment Pond Outslope

Exposure: S & E

Slope: 25 deg.

Sample Date: 9 Sept 96

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
--	------	------	------	------	------	------	------	------

**SHRUBS**

**FORBS**

Aster foliaceus	35.00	40.00	15.00	10.00	15.00	0.00	0.00	0.00
Astragalus cicer	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00
Halogeton glomeratus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**GRASSES**

Poa pratensis	0.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00
Agropyron cristatum	0.00	0.00	0.00	0.00	20.00	45.00	20.00	35.00

**COVER**

Total Living Cover	35.00	40.00	15.00	10.00	35.00	45.00	40.00	35.00
Litter	10.00	5.00	5.00	10.00	5.00	25.00	20.00	10.00
Bareground	5.00	5.00	5.00	10.00	5.00	10.00	30.00	40.00
Rock	50.00	50.00	75.00	70.00	55.00	20.00	10.00	15.00

**% COMPOSITION**

Shrubs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forbs	100.00	100.00	100.00	100.00	42.86	0.00	12.50	0.00
Grasses	0.00	0.00	0.00	0.00	57.14	100.00	87.50	100.00

UP&L-TRAIL MOUNTAIN MIN  
COTTONWOOD FAN PORTA  
Sediment Pond Outslope  
Exposure: S & E  
Slope: 25 deg.  
Sample Date: 9 Sept 96

9.00 10.00 Mean SDev Freq

**SHRUBS**

0.00	0.00	11.50	14.33	50.00
0.00	0.00	0.50	1.50	10.00
0.00	25.00	2.50	7.50	10.00

**FORBS**

Aster foliaceus
Astragalus cicer
Halogeton glomeratus

0.00	0.00	1.50	4.50	10.00
30.00	5.00	15.50	16.04	60.00

**GRASSES**

Poa pratensis
Agropyron cristatum

30.00	30.00	31.50	10.50
10.00	5.00	10.50	6.50
40.00	40.00	19.00	15.46
20.00	25.00	39.00	22.56

**COVER**

Total Living Cover
Litter
Bareground
Rock

0.00	0.00	0.00	0.00
0.00	83.33	53.87	44.63
100.00	16.67	46.13	44.63

**% COMPOSITION**

Shrubs
Forbs
Grasses

*PHOTOGRAPH*



Trail Mountain Mine - Sediment Pond Outslope

## **COTTONWOOD CANYON AREA**

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Soil Piles

AREA: Cottonwood Fan Portal Area

DATE: Sept. 9, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 35 deg.

EXPOSURE: Variable

ANIMAL USE/DISTURBANCE:

EROSION: Slight

COVER: approx. 35-40%

DOMINANT PLANT SPECIES OBSERVED:

*Artemisia tridentata*

*Atriplex canescens*

*Atriplex confertifolia*

*Brickellia scabra*

*Chrysothamnus nauseosus*

*Aster foliaceus*

*Halogeton glomeratus*

*Medicago sativa*

*Agropyron cristatum*

*Elymus cinereus*

*Elymus spicatus*

*Elymus lanceolatus*

*Elymus smithii*

NOTES: 1) Qualitative sampling only.

2) Vegetation looked very good.

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: Reclaimed Slope

AREA: Cottonwood Fan Portal Area

DATE: Sept. 9, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 35 deg.

EXPOSURE: W

ANIMAL USE/DISTURBANCE: Slight to moderate

EROSION: Slight, natural patterns.

COVER: (see quantitative data)

DOMINANT PLANT SPECIES OBSERVED: (see also quantitative data)

*Artemisia nova*  
*Artemisia tridentata*  
*Atriplex canescens*  
*Atriplex confertifolia*  
*Chrysothamnus nauseosus*

*Aster foliaceus*  
*Halogeton glomeratus*

*Agropyron cristatum*  
*Elymus salinus*  
*Elymus junceus*  
*Elymus cinereus*  
*Stipa hymenoides*

- NOTES: 1) Sampled regularly along entire slope (cover n=20).
- 2) Woody spp. density was done by pt. quarter method (n=20).
- 3) Area continues to look excellent.
- 4) See the separate report that was written for this area.

PACIFICORP  
QUALITATIVE SAMPLING DATA SHEET AND  
QUANTITATIVE/QUALITATIVE NOTES  
1996

SITE NAME: CFP Tube Conveyor Area (1996 Seeding)

AREA: Trail Mtn. Mine/Cottonwood Fan Portal Area

DATE: Sept 9, 1996

WORKERS: P. Collins, D. Collins

SLOPE: 28 deg.

EXPOSURE: W, N, S.

ANIMAL USE/DISTURBANCE: None

EROSION: Negligible

COVER: Approx. 10% or less

DOMINANT PLANT SPECIES OBSERVED:

*Atriplex gardneri*

*Melilotus officinalis*

*Halogeton glomeratus*

*Kochia scoparia*

*Aster chilensis*

*Helianthus annuus*

*Elymus smithii*

(other grass was too young for identification).

- NOTES:
- 1) Qualitative sampling only.
  - 2) Seeded this year, it was the first season for germination and growth, so it was impossible to see and identify some seedlings.
  - 3) The area was covered with erosion control matting.
  - 4) Seedlings above portal were almost all yellow sweet clover.

*PHOTOGRAPHS*



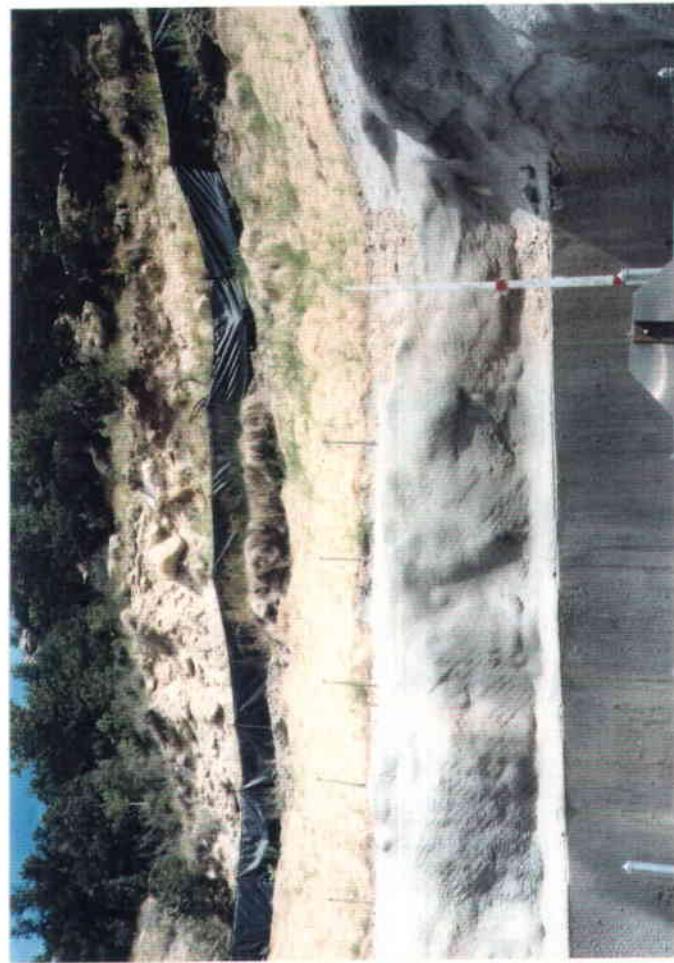
Cottonwood Canyon - Tube Conveyor Area - 1996 Seeding  
(1 of 2)



Cottonwood Canyon - Soil Piles



Cottonwood Canyon - Fan Portal Reclaimed Slope



Cottonwood Canyon - Tube Conveyor Area - 1996 Seeding  
(2 of 2)

**REVEGETATION MONITORING OF THE  
COTTONWOOD FAN PORTAL AREA**

**1996**



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Fieldwork:  
Patrick Collins  
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Report Date:  
April 1997

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## **REVEGETATION MONITORING AT COTTONWOOD CANYON FAN PORTAL AREA**

**1996**

### **SCOPE**

The following document contains quantitative data in an area that is operated by PacifiCorp and called the FAN PORTAL AREA. The purpose of this report is to show results from monitoring the vegetation of the reclaimed slope.

Studies were performed in accordance with the guidelines supplied by the State of Utah, Division of Oil, Gas and Mining (DOGM).

### **INTRODUCTION**

Quantitative and qualitative data were taken in the study area. Sampling was accomplished September 9, 1996. Similar quantitative data have also been taken previously on three consecutive years (1989-1991). Qualitative and/or quantitative data were also recorded 1992 and 1993. Finally, quantitative data were recorded again in 1994 - 1996.

### General Site Description

A general site description has been included in previous year's reports and has also been included below.

The Fan Portal Area is located in Cottonwood Canyon, approximately 12 miles northwest of Orangeville, Utah. As described in previous reports, the reclaimed area was earlier disturbed by mining and other activities. The native vegetation was dominated by pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*), with salina wildrye (*Elymus salinus*) as the dominant understory species. Elevation of the study site ranges between 7,100 ft and 7,400 ft above sea level. Slopes of the study area were approximately 35 degrees.

### Reference Area

A reference area to be used as a standard for success at the time of final reclamation had previously been selected. The reference area is presently dominated by the same plant species as listed above for the reclaimed site before it was disturbed. The reference area was chosen earlier to comply with guidelines provided by DOGM and was estimated to have similar slopes, soils, exposure, species composition, precipitation, elevation and other environmental variables. Quantitative sampling was not done for the reference area in 1996.

## METHODS

Sampling methods were consistent in 1996 when compared to previous sampling. This should simplify comparisons between sample years. These methods are summarized below.

### Cover and Composition

Bi-directional random/regular placement of sampling plots were designed to provide a degree of unbiased accuracy of the data compiled. This was accomplished by establishing transect lines randomly placed on the areas to be sampled. These transect lines were placed over the entire study area to adequately represent the area as a whole. Regular points on the transect lines were then marked. From these marks, the sample points were determined by random distance numbers at right angles to the transect lines.

Cover estimates were made using ocular methods with meter square quadrats. Species composition and relative frequencies were also assessed from the quadrats. Additional information recorded on data sheets were: estimated precipitation, slope, exposure, grazing use, animal disturbance and other appropriate notes.

Plant nomenclature follows Welsh et al. "A Utah Flora" (1993).

### Woody Species Density

Density of woody plant species were recorded using the point quarter distance method (Cottom and Curtis 1956). In this method, random points were placed on the sample sites and measured into four quarters. The distances to the nearest woody plant species were then recorded in each quarter. The average point-to-individual distance was equal to the square root of the mean area per individual.

### Sample Adequacy

Sampling adequacy for cover, and woody species density was attempted using formulas from Snedecor and Cochran (1980), with a target confidence of 80% of the samples being within 10% of the true mean for the shrub communities of the area. All sample means, standard deviations, and sample sizes were included in this report to enable the reviewers to apply further statistical tests if desired.

## RESULTS

### The Reclaimed Slopes

The vegetative cover of the reclaimed slopes was estimated as 44.50% (Table 1). Trees and shrubs made up 40.55%, grasses

48.79%, and forbs 10.66% of the living cover (Table 1). The dominant shrubs (by cover) of this area were big sagebrush (*Artemesia tridentata*) and fourwing saltbush (*Atriplex canescens*). The dominate grass species, Gt. Basin wildrye (*Elymus cinereus*), was estimated as 13.75% (Table 2). Most frequent species observed in the quadrats were Gt. Basin wildrye, big sagebrush, and crested wheatgrass (*Agropyron cristatum*).

Woody plant species density was estimated at 1,478 individuals per acre (Table 3) using the point quarter sampling method.

**TABLE 1:** Total cover and composition summary for the Reclaimed Slopes of the Cottonwood Canyon Fan Portal Area. The table shows the mean percent cover and composition with standard deviations and sample sizes.

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZES
Total Living Cover	44.50	13.96	20
Litter	16.00	8.00	20
Bareground	13.00	6.96	20
Rock	26.50	12.26	20
<b>COMPOSITION</b>			
Trees/Shrubs	40.55	30.07	20
Forbs	10.66	24.79	20
Grasses	48.79	31.62	20

**TABLE 2:** Species cover and frequency summary for the Reclaimed Slopes of the Cottonwood Canyon Fan Portal Area. The table shows the mean percent cover, standard deviation, sample size and relative frequency by species.

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
<b>TREES &amp; SHRUBS</b>				
<i>Artemisia tridentata</i>	13.50	17.83	20	60.00
<i>Atriplex canescens</i>	2.50	10.90	20	5.00
<i>Atriplex confertifolia</i>	0.50	2.18	20	5.00
<i>Chrysothamnus nauseosus</i>	3.25	5.97	20	25.00
<b>FORBS</b>				
<i>Aster foliaceus</i>	4.25	9.78	20	20.00
<b>GRASSES</b>				
<i>Agropyron cristatum</i>	3.25	3.96	20	45.00
<i>Elymus cinereus</i>	13.75	13.40	20	70.00
<i>Elymus spicatus</i>	1.25	3.49	20	15.00
<i>Elymus junceus</i>	0.25	1.09	20	5.00
<i>Elymus salinus</i>	1.25	4.44	20	10.00
<i>Stipa hymenoides</i>	0.75	2.38	20	10.00

**TABLE 3: Woody species densities of the Reclaimed Slopes of the Cottonwood Canyon Fan Portal Area.**

	NUMBER/ACRE*
<i>Artemesia tridentata</i>	886.53
<i>Atriplex confertifolia</i>	129.29
<i>Atriplex canescens</i>	147.75
<i>Chrysothamnus nauseosus</i>	<u>313.98</u>
<b>TOTAL</b>	<b>1477.55</b>

## **RAW DATA**

**UP&L-COTTONWOOD FAN PORTAL**

Reclaimed Slope

Exposure: W

Slope: 35 deg.

Sample Date: 9 Sept 96

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
<b>SHRUBS</b>								
Artemisia tridentata	5.00	20.00	60.00	20.00	25.00	20.00	0.00	0.00
Atriplex canescens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chrysothamnus nauseosus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Atriplex confertifolia	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>FORBS</b>								
Aster foliaceus	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>GRASSES</b>								
Agropyron cristatum	0.00	10.00	0.00	5.00	0.00	10.00	0.00	0.00
Elymus cinereus	15.00	0.00	10.00	5.00	25.00	5.00	45.00	25.00
Elymus spicatus	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
Elymus junceus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus salinus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
Stipa hymenoides	10.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
<b>COVER</b>								
Total Living Cover	50.00	40.00	75.00	35.00	50.00	35.00	45.00	30.00
Litter	25.00	25.00	10.00	10.00	5.00	25.00	5.00	25.00
Bareground	10.00	20.00	5.00	10.00	5.00	20.00	10.00	15.00
Rock	15.00	15.00	10.00	45.00	40.00	20.00	40.00	30.00
<b>% COMPOSITION</b>								
Shrubs	10.00	75.00	80.00	57.14	50.00	57.14	0.00	0.00
Forbs	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grasses	50.00	25.00	20.00	42.86	50.00	42.86	100.00	100.00

9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00
10.00	5.00	0.00	60.00	0.00	20.00	0.00	20.00	5.00	0.00
0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	10.00	15.00	20.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	5.00	35.00
0.00	5.00	0.00	5.00	5.00	10.00	0.00	0.00	5.00	0.00
5.00	15.00	40.00	0.00	25.00	0.00	0.00	15.00	0.00	0.00
0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35.00	30.00	40.00	65.00	80.00	30.00	35.00	50.00	35.00	40.00
20.00	15.00	10.00	10.00	10.00	25.00	25.00	10.00	5.00	10.00
15.00	20.00	10.00	5.00	5.00	10.00	25.00	25.00	10.00	25.00
30.00	35.00	40.00	20.00	5.00	35.00	15.00	15.00	50.00	25.00
28.57	16.67	0.00	92.31	62.50	66.67	28.57	70.00	71.43	0.00
0.00	0.00	0.00	0.00	0.00	0.00	71.43	0.00	14.29	87.50
71.43	83.33	100.00	7.69	37.50	33.33	0.00	30.00	14.29	12.50

## UP&amp;L-COTTONWOOD FAN PORTAL

Reclaimed Slope

Exposure: W

Slope: 35 deg.

Sample Date: 9 Sept 96

19.00 20.00 Mean SDev Freq

0.00	0.00	13.50	17.83	60.00
0.00	0.00	2.50	10.90	5.00
10.00	10.00	3.25	5.97	25.00
0.00	0.00	0.50	2.18	5.00

## SHRUBS

*Artemisia tridentata*  
*Atriplex canescens*  
*Chrysothamnus nauseosus*  
*Atriplex confertifolia*

0.00 0.00 4.25 9.78 20.00

## FORBS

*Aster foliaceus*

10.00	0.00	3.25	3.96	45.00
20.00	25.00	13.75	13.40	70.00
0.00	15.00	1.25	3.49	15.00
0.00	0.00	0.25	1.09	5.00
0.00	0.00	1.25	4.44	10.00
0.00	0.00	0.75	2.38	10.00

## GRASSES

*Agropyron cristatum*  
*Elymus cinereus*  
*Elymus spicatus*  
*Elymus junceus*  
*Elymus salinus*  
*Stipa hymenoides*

40.00	50.00	44.50	13.96
25.00	25.00	16.00	8.00
10.00	5.00	13.00	6.96
25.00	20.00	26.50	12.26

## COVER

Total Living Cover  
Litter  
Bareground  
Rock

25.00	20.00	40.55	30.07
0.00	0.00	10.66	24.79
75.00	80.00	48.79	31.62

## % COMPOSITION

Shrubs  
Forbs  
Grasses